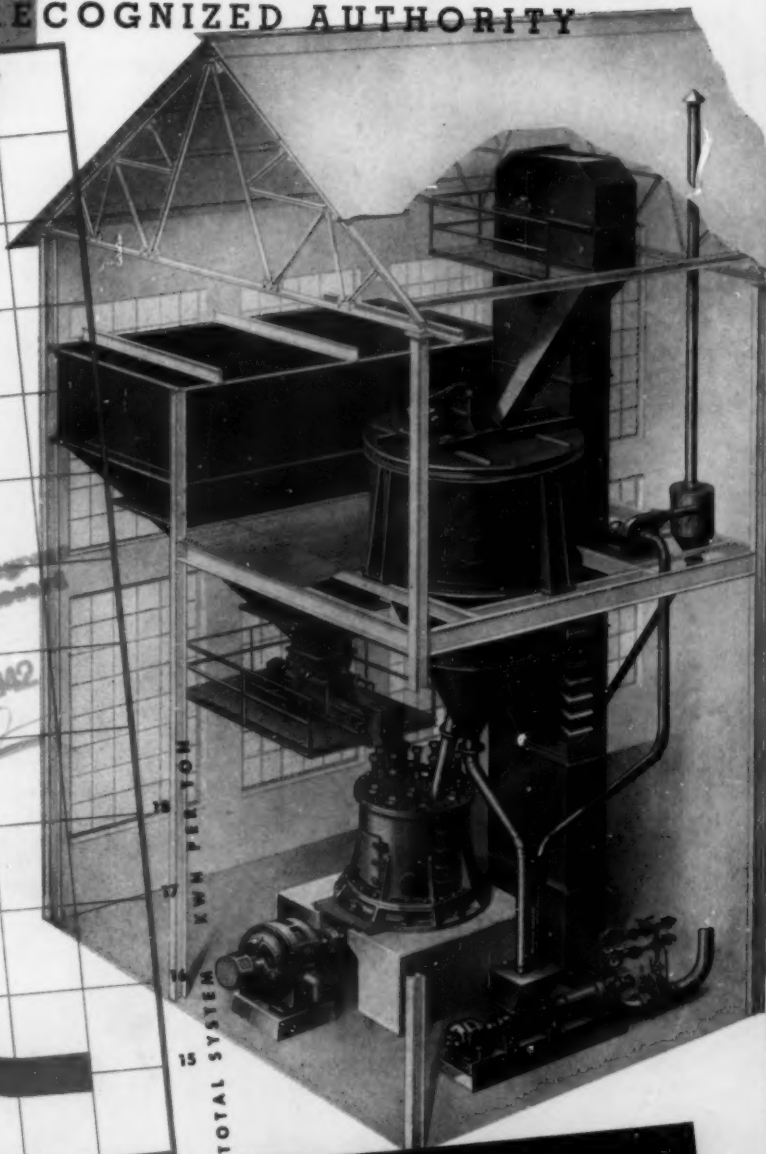
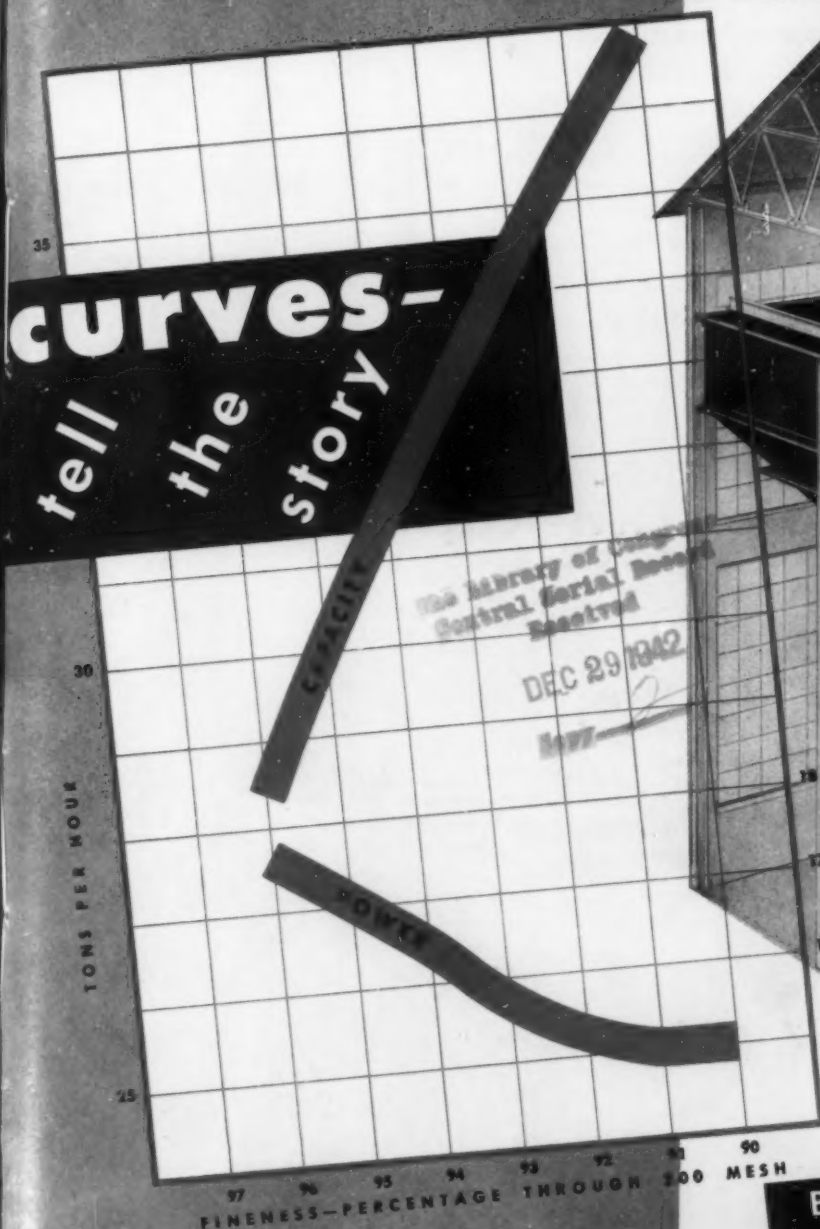


DECEMBER, 1942

Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY



Grind raw material efficiently
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Based on actual long-time average at 55 grindability. Both drying and grinding are accomplished within the system.

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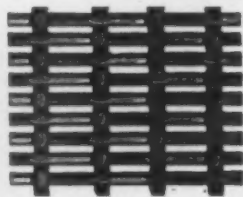
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LUDLOW-SAYLOR CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

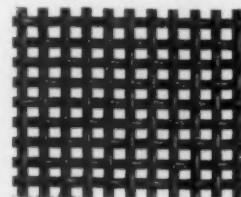
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withstand abrasion longer —
endure vibration better —
resist fatigue to the utmost



REK-TANG
long-slot
weave



DOUBLE-CRIMP
square-mesh
weave



The background at top of page shows the "Perfect" Double-Crimp Weave.
The small cuts in the center panel compare REK-TANG Weave and Double-Crimp Weave.
The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized under weaving.
Samples on request.

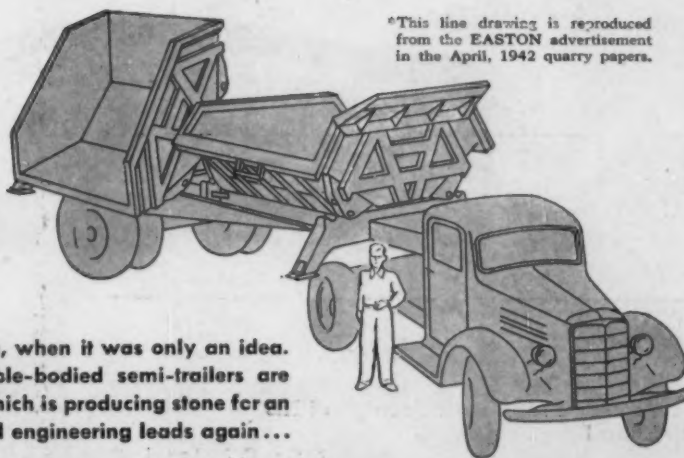
The **LUDLOW-SAYLOR**
WIRE COMPANY
SAINT LOUIS

DEC 21 1942

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ANOTHER EASTON FIRST!

You saw it first as an artist's sketch, when it was only an idea. Now these EASTON TR-15D double-bodied semi-trailers are working day and night at a plant which is producing stone for an important wartime project. EASTON engineering leads again...



It was DOUBLE or nothing!

Wartime operating conditions at a large Southern plant required that rock be hauled from shovel to crusher in comparatively large loads. The need to save substantially on fuel, rubber and man-power made semi-trailer haulage the logical first choice.

A survey by our engineers showed that EASTON semi-trailers shuttling payloads of approximately 17 tons each would provide ample tonnage at lowest cost per ton. But, at the dumping end of the route the crusher-hopper was

too small to take the 17-ton load in one discharge. To meet these unusual conditions, the container, which would normally be a body of 17 tons capacity, was divided into two sections which are dumped independently. The half-loads discharged are handled easily in the small hopper opening without choking or damaging the crusher.

In principle the EASTON double-bodied semi-trailer is not a new idea. It was blueprinted at EASTON several years ago. It illustrates how a limitless reser-

voir of ideas and experience in quarry haulage enables EASTON engineers to help solve rock-handling problems. Whether you need repairs, replacements or ideas for your haulage system write to: Engineering Counsel, Easton Car & Construction Company, Easton, Pa.

B-1002

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Rock Products

Volume 45 • December, 1942 • Number 12

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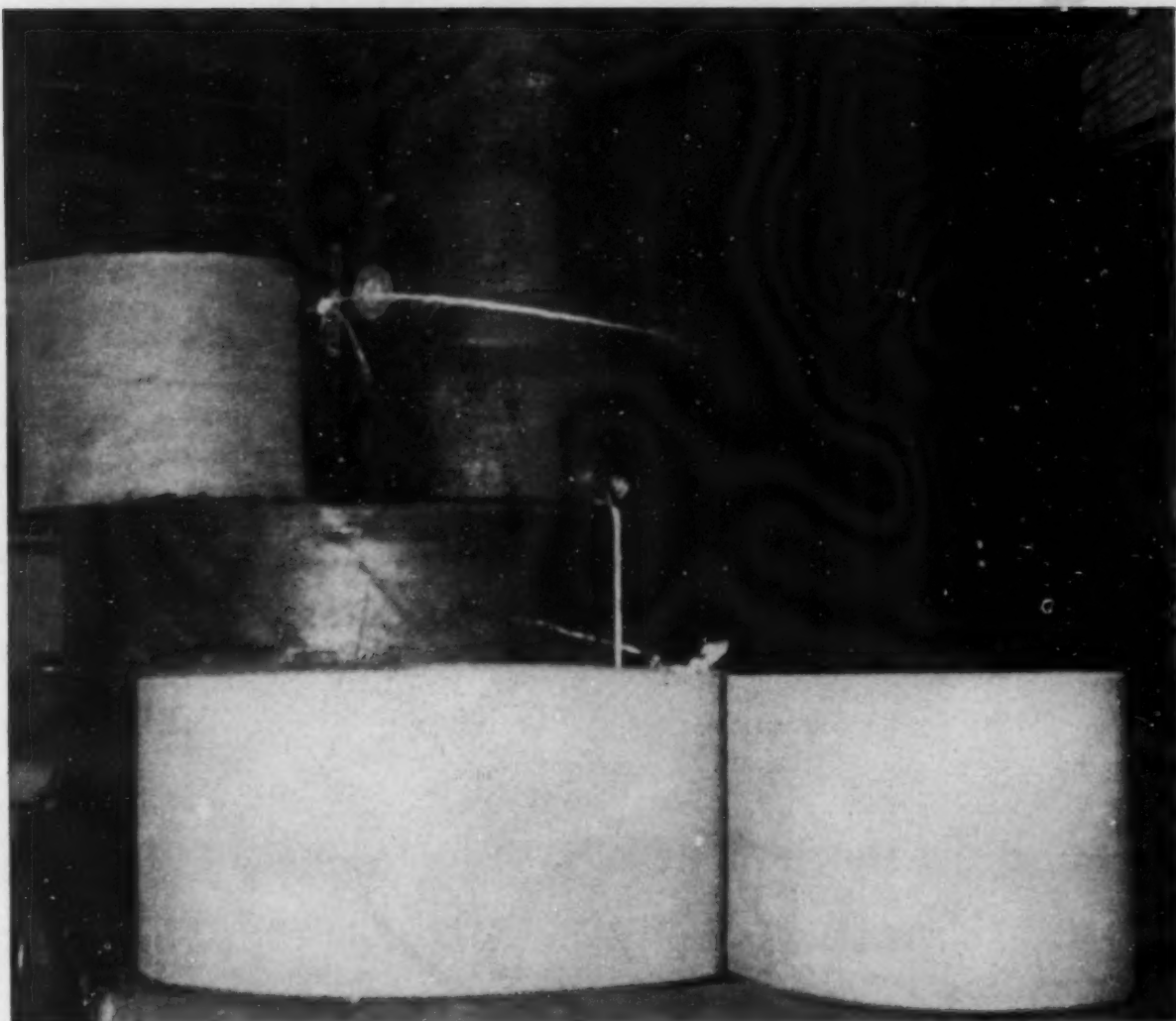
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Found! Rubber in coal mines and quarries

Another B. F. Goodrich suggestion to save rubber

SAVING rubber today is just like finding it — and rubber can be saved in every plant where belts are used.

Take the case of a West Virginia coal mine. They had three old and worn belts, containing about 44 pounds of rubber, which ordinarily would have been thrown away. The B. F. Goodrich distributor suggested salvage of these belts for use on other drives — and here is what they made.

Original Belts	Made Into
2—10-in. 7 ply	1—3½-in. 5 ply—open end
1—12-in. 7 ply	1—4-in. 5 ply—open end
	1—3½-in. 5 ply—endless
	2—6-in. 5 ply—endless
	1—8-in. 5 ply—endless

Out of the original discarded belts came 6 new serviceable belts (80% or 35 pounds of the original rubber was salvaged).

B. F. Goodrich Plylock splice may help you FIND rubber in your plant

Converting old belts into new is a practical, easy way to salvage rubber. Frayed edges can be trimmed, worn plies stripped off, damaged spots repaired, and the patented Plylock splice can make them endless *on the job*. Most B. F. Goodrich distributors are equipped with portable electric vulcanizers and with their knowledge of how to make the Plylock splice, can

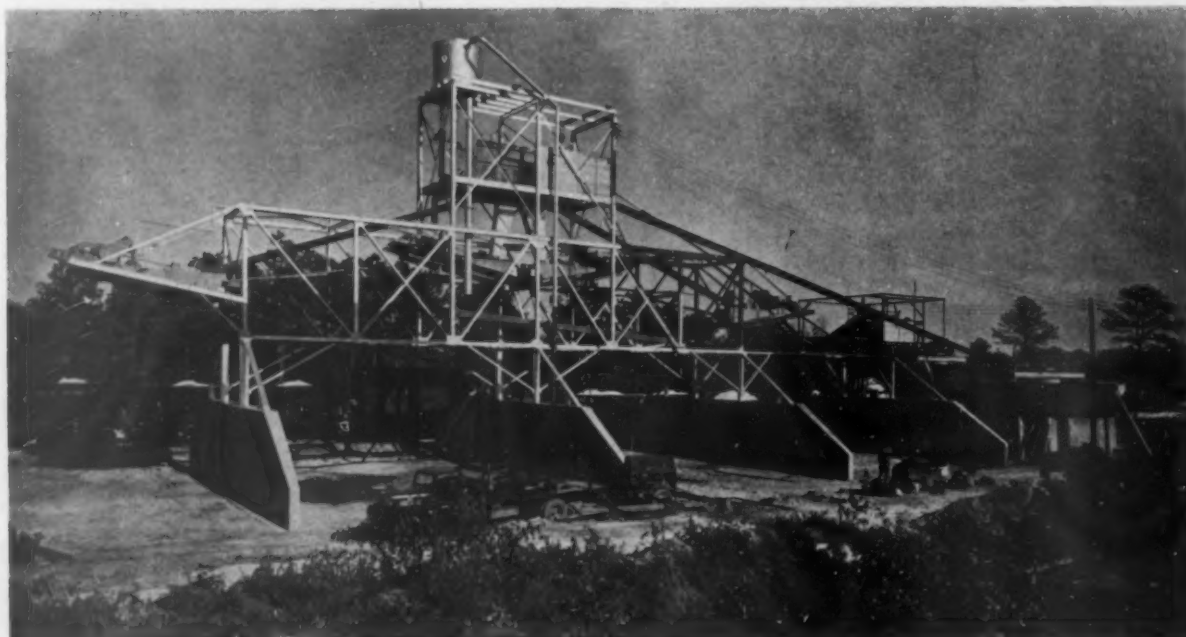
convert old belts and also do away with metal fasteners.

Before you discard any old belting call your nearest B. F. Goodrich distributor for his advice. (Write us if you don't know his address.) Also write us for a series of folders filled with helpful tips on how to conserve all the industrial rubber products you have. For users of conveyor belts, we will also send on request a special illustrated Belt Maintenance Manual. The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.

B. F. Goodrich
FIRST IN RUBBER

High specification sand production

PLUS MAXIMUM FLEXIBILITY AND PRODUCT CONTROL



Whitehead Brothers Company plant, before walls were built, showing the equipment composing the Dorr System.

FOUR STEPS IN THIS DORR SYSTEM

STEP 1

Desilting and Clay Removal in a Dorr Hydro-separator, in background.

STEP 2

Fractionation into 6 Sized Products in a Fahrenwald Sizer, on top of steel structure.

STEP 3

Washing and Grading Products Nos. 1-4 Incl. in four Dorr Classifiers, mounted on steel structure, discharging into four bins below.

STEP 4

Washing and Grading Product No. 5—Fine Core Sand in a Dorr Thickener and a Dorr Classifier in background.

● This newest Dorr Sand Preparation System of Whitehead Brothers Company at Dividing Creek, N. J., produces 40 to 50 tons an hour of high grade moulding sand. Five washed and closely sized products are made, ranging upwards in size from fine core sand.

Four steps are taken in sequence as noted at the left. Positive mechanical adjustment is provided at each unit. Result—maximum flexibility of operation—maximum control of the mesh and distribution of sizes in the five finished products.

The Dorr Sand Preparation System is equally applicable to the washing and sizing of other types of sand—concrete, asphalt, filter and special purpose sands. A sand deposit deficient in certain essential grain sizes no longer means an inability to make top specification products.

A Dorr engineer will gladly explain the Dorr System and what it will do under your own conditions.



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FREE WAR POSTERS

Since the present series of war poster illustrations started to appear in Wickwire Spencer advertising, requests for them have been pouring in from every part of the country. Because of this wide-spread enthusiasm, the popular poster shown above has now been reprinted with the title which won first prize in a 4-state con-

test among war-workers. It symbolizes to workmen America's war-*production* spirit.

The painting is by the famous artist, Boris Artzybasheff, whose illustrations appear in Life Magazine, and on Time Magazine covers. The posters are of a convenient size; will fit wherever there is a 30-inch space.



Another Achievement for

WICKWIRE ROPE!

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Send.....free posters, "I Pull with Uncle Sam!"

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MULTICLONES

Eliminate MANIFOLDING

Multiclone's exclusive vane design permits any number of tubes to be installed with one inlet header and one outlet header simplifying construction and eliminating the complications of manifolding. Less material is needed.

Less floor area and less headroom are required.

Because the gas travels over a smaller surface there is less surface subject to wear and because of the vane type of construction, should wear occur, it can affect only parts that are easily and readily replaceable without dismantling the entire unit.

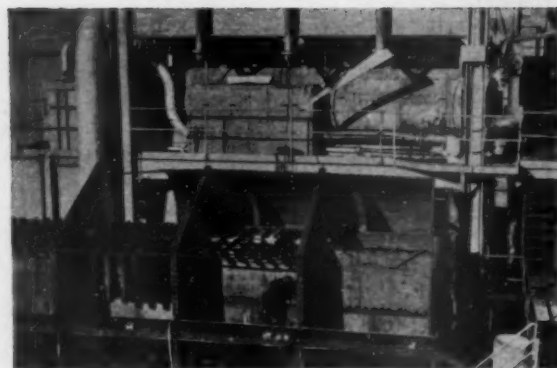
In the Multiclone, the simplified header construction together with the enclosure of the tubes by the hopper greatly reduces heat radiation. This facilitates temperature control and where condensation might occur reduces insulation requirements to a minimum.

The Multiclone design makes possible its installation in existing structures in what would otherwise be waste space and in places where manifolding would be impossible.

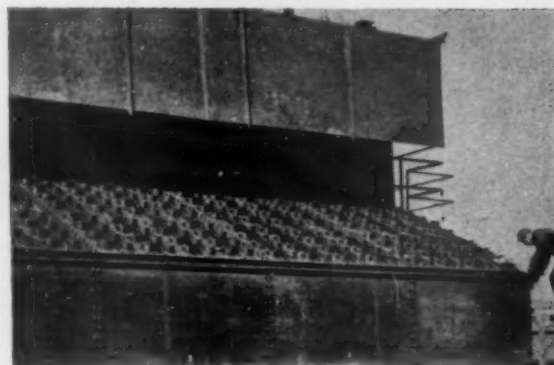
The single manhole through which all tubes can be reached simplifies inspection. Thus the elimination of manifolding simplifies installation, saves space, decreases wearing surface, reduces heat radiation and gives better temperature control.

ADDITIONAL MULTICLONE ADVANTAGES

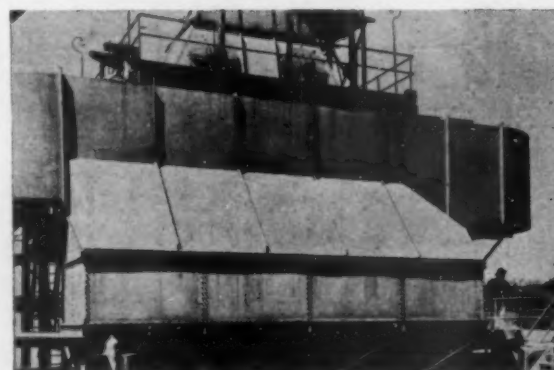
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|---------------------------------------|---------------------------------|
| 1. High Efficiency. | 6. No moving parts to wear out. |
| 2. No Fire Hazard. | 7. Rugged Construction. |
| 3. Compact Tube Assembly. | 8. Easily Insulated. |
| 4. Low Installation Cost. | 9. Low Power Consumption. |
| 5. Readily accessible for inspection. | 10. Easily Assembled. |
| | 11. Unit Dust Hopper. |



Compact tube assembly.



Common header.



No manifolding. Multiclone discharges directly into flue.

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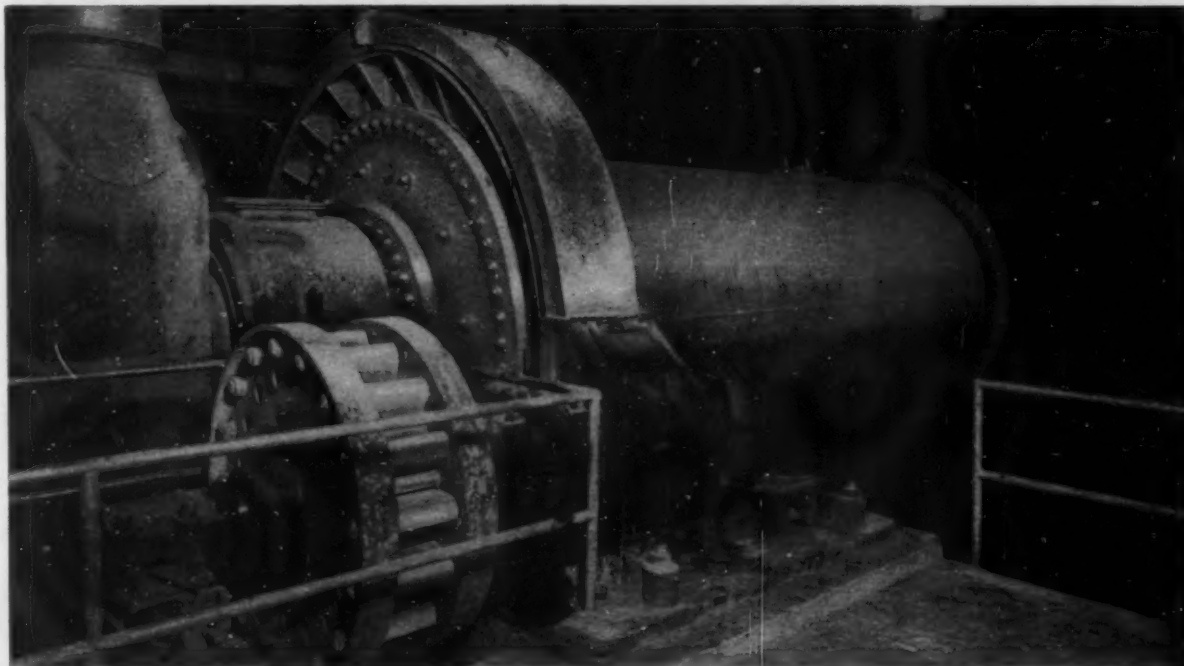


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Among the engineers and operators of the nation's,—and the world's—"greatest" cement, chemical and process plants,—and many of the not-so-big ones, also,—any mention of the term "Compartment Mill" immediately conjures up the associative thought of "Traylor." That is because "Traylor" is practically synonymous with pioneering, scientific fore-knowledge of operators' requirements, thoughtful design and expert workmanship,—all elements that must be present in any machine to render it of maximum efficiency and at the same time be economical of operation and maintenance.

That goes for all types of Traylor Grinding Mills, too,—ball mills, tube mills, pebble mills, rod mills and special mills. In fact, almost any Traylor Grinding Mill may be considered "special" in the sense that it is built to fit the job it is to do, in nearly every case. Our engineers are charged with doing this fitting and, therefore, they must, and constantly do, study operations and trends. Thus, quite often, they are able to suggest improvement in existing practices or devise new ones. You are invited to use those facilities, without obligation. Write us, soon!

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DECEMBER, 1942

How to choose and use WIRE ROPE SHEAVES

Practically every piece of wire rope on a "running" job operates over sheaves. By choosing sheaves which are exactly suited to the job, and then keeping those sheaves in good repair, the service life of the wire rope can be greatly lengthened. Here are some simple tips that have been tried and proved in service:

1. Check groove diameter—Make sure that the sheave groove is large enough so that it doesn't pinch the rope. The rope must seat freely down into the bottom of the groove. If it rides the sides of the groove, pinching and abrasion will result. Unequal strains will be set up. Much of the service life built into the rope will be lost.

For best results, observe the tolerances listed in the following table:

Nominal wire rope diameter	Minimum groove tolerance	Maximum groove tolerance
0 to $\frac{3}{4}$ "	+ $\frac{1}{16}$ "	+ $\frac{1}{16}$ "
$\frac{1}{2}$ to $1\frac{1}{8}$ "	+ $\frac{3}{64}$ "	+ $\frac{3}{32}$ "
$1\frac{1}{16}$ to $1\frac{1}{2}$ "	+ $\frac{1}{16}$ "	+ $\frac{1}{8}$ "
$1\frac{3}{8}$ to $2\frac{1}{4}$ "	+ $\frac{3}{32}$ "	+ $\frac{3}{16}$ "
$2\frac{5}{16}$ and larger	+ $\frac{1}{8}$ "	+ $\frac{1}{4}$ "

2. Check sheave diameter—The larger the sheave, the longer your wire rope will last. When a rope pulls sharply around a small-diameter sheave, it is subjected to severe bending and crushing. This tends to make the rope "go out of round," causes wear on outside wires, and stresses the various parts of the rope unequally.

It should be remembered that certain machines and equipment must of necessity be designed with

smaller sheaves than indicated by best sheave practice. This does not indicate poor design, but means simply that, all factors considered, the disadvantages of smaller sheaves are outweighed by advantages in other features of the design.

But whenever there is a choice between a small sheave and larger one—the larger diameter sheave should be used.

3. Keep grooves and flanges smooth—After a sheave has been handling heavy loads for some time, the imprint of the rope lay is apt to be worn into the groove of the sheave. A wire rope, working over this sharp-edged imprint, is subject to abrasion and loss of operating efficiency.

If a new rope is put in service over such a sheave, its lay will not fit into the imprints and the "chewing" or "filing" action will be greatly increased. Even if a new rope is not installed, the old rope will be badly abraded as its lay lengthens and enlarges the depth and length of the imprint.

The best way to prevent sheave grooves from wearing prematurely is to select a sheave made of the proper material. Manganese steel sheaves (which are now difficult or impossible to get) are the best all-around sheaves available. Other alloy steels have also been used with success.

However, if you cannot get special sheave steel, the next best thing is to take care of the sheaves you do have. Inspect the sheave grooves frequently. If evidence of wear develops, smooth up the grooves immediately in accordance with groove tolerances which appear in the foregoing table. You will be more than repaid for the effort in longer sheave and rope service and in more efficient operation.

BETHLEHEM STEEL COMPANY



ROTARY KILNS

OUR ROTARY KILNS

in the

WAR PROGRAM

PLAY AN IMPORTANT PART
IN THE MAKING OF

MAGNESIUM
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DOLOMITE
CEMENT
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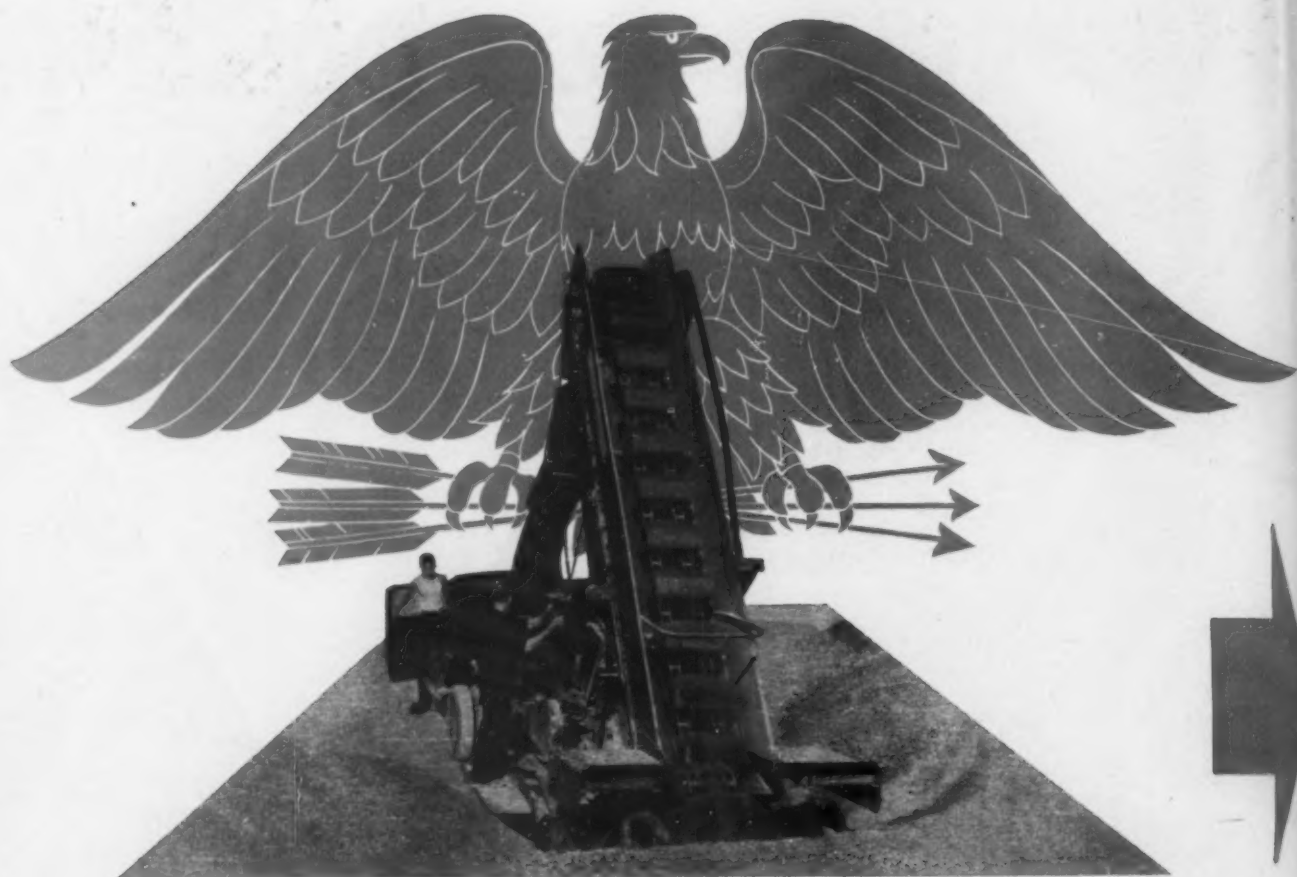
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60 EAST 42ND STREET

CEMENT ENGINEERING
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NEW YORK, N. Y.



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AND THE

WAR

CENTRAL PLANTS



BITUMINOUS
FINISHERS



TRAVEL PLANTS



PERMANENT
CONVEYORS



DITCHERS



CARRIERS



You Barber-Greene owners are fortunate in having machines which have proven their ability to last for years of service. During the present emergency, it is important that every precaution be taken to keep your Barber-Greene in good condition. The delivery of repair parts is becoming uncertain. Many broken parts are due to carelessness, or improper maintenance. It is impossible to outline here all of the points to be watched. Good, sound horse sense must be exercised.

THE IMPORTANCE OF LUBRICATION

- ★ Nothing can add to the life of the machine more than thorough lubrication of the moving parts, properly executed at the proper intervals with the correct lubricants. A breakdown resulting from improper lubrication is inexcusable. Correct and systematic lubrication can be maintained with little or no loss in operating time.

OPERATE WITHIN THE MACHINE'S CAPACITY

- ★ You will lay more road or handle more material in the long run by refraining from crowding your Barber-Greene. A good operator who has the "feel" of his machine can immediately sense an overload. There are times when momentary overloads cannot be avoided, but for the long steady pull, operate within the machine's normal capacity.

KEEP YOUR MACHINE IN PROPER ADJUSTMENT

- ★ Make regular checks of all of the adjustable points on your Barber-Greene. Particularly notice chain slack and bearings. A chain which becomes too loose can climb the sprocket and seriously damage the machinery.

WATCH SUCH VITAL POINTS AS THE AIR CLEANER

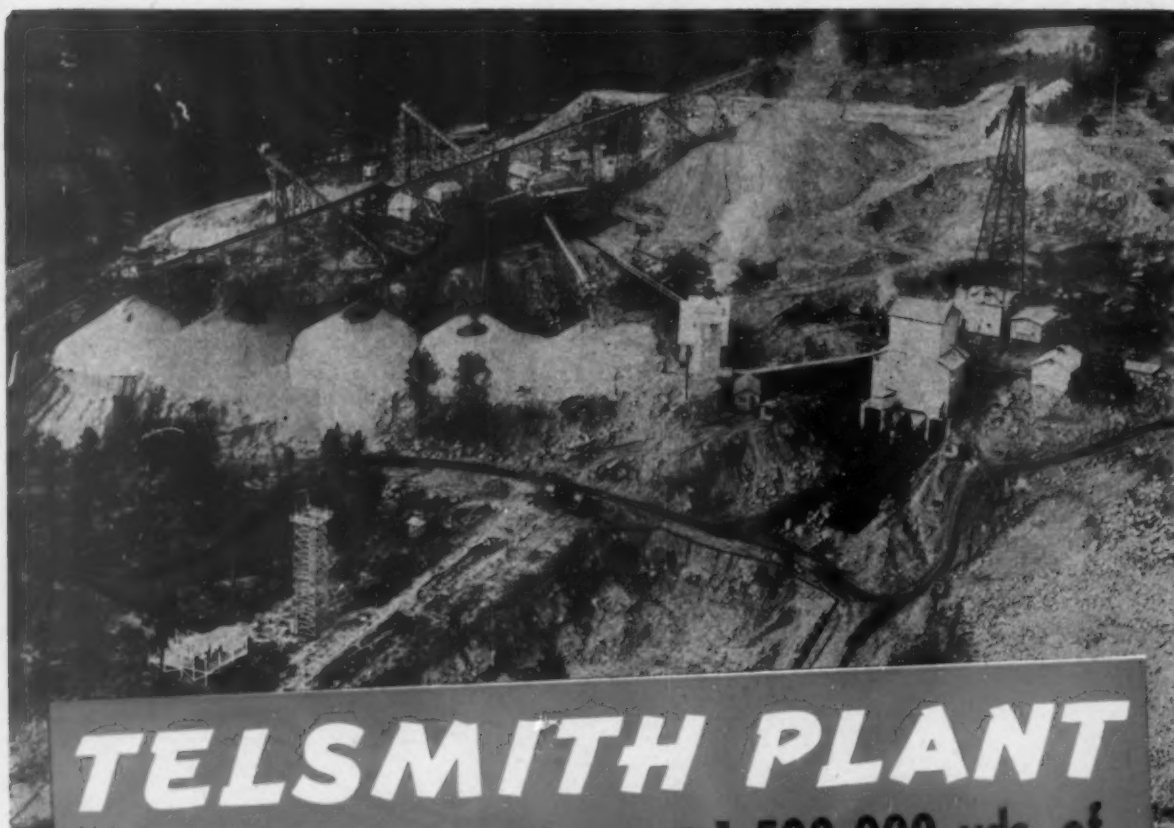
- ★ Your Barber-Greene is equipped with the air cleaner suitable for the type of work done by the machine. Many Barber-Greene's operate in highly abrasive dust which can wreck an engine if it gets into the cylinders. Carefully follow the instructions on the air cleaner, oil filter, etc.

ALWAYS GUARD YOUR RUBBER BELT

- ★ Load the belt evenly. Have a hopper or some other arrangement for preventing large chunks from striking the belt at the loading end. Keep the belt properly aligned. Do not convey hot materials with your Barber-Greene Belt Conveyor unless it has a special "hot belt." (Even a special hot belt can be damaged from material above 300 degrees or by hot material which is discharged onto the belt conveyor when it is idle.)

BARBER-GREENE COMPANY, Aurora, Ill., U. S. A.





TELSMITH PLANT

turning out 1,500,000 yds. of
aggregate for NORFORK DAM

Quarry Plant Equipment by TELSMITH

- One 48" x 12' Tel Smith Heavy-Duty Apron Feeder
- One 72" x 25' Tel Smith Hercules Scalping Screen
- One 16-B Tel Smith Primary Breaker
- One 5' x 12' Tel Smith Double Deck Pulsator Screen
- Two 30" x 18" Tel Smith Double Roll Crushers

Sand and Gravel Plant Equipment by TELSMITH

- Two 60" x 22' Tel Smith Hercules Washing Screens
- Two 5' x 12' Tel Smith Double Deck Pulsator Screens
- Two 3' x 8' Tel Smith Single Deck Pulsator Screens
- One 57" x 12' Tel Smith Screw Rewasher
- Four No. 10 Tel Smith Sand Tanks
- Four 66" x 16' Tel Smith Twin Screw Sand Classifiers
- Five 30" x 5'6" Tel Smith Plate Feeders
- Three 24" x 5' Tel Smith Plate Feeders

Total power requirements for
both quarry, and sand and
gravel plants..... 1250 hp.

● Down in Arkansas, near Mountain Home, the Utah Construction Co. and Morrison-Knudsen Co. are building the huge Norfork Dam. A flood control project, it is also a future source of power. The expected completion date is July, 1944.

About 1,500,000 cu. yds. of aggregate will be needed. To produce it, this combination quarry and sand-gravel plant was designed by Tel Smith engineers. And all its machinery, except some conveyors and electrical equipment, is Tel Smith-built.

Six 10-yd. trucks haul the limestone rock from quarry to plant. The plant's rock-crushing section turns out 140 cu. yds. per hr. Three sizes of product are made: 6"-3", 3"-1½", and stone dust.

35 bottom-dump cars, each of 140,000 lb. capacity, haul the ma-

terial from the White River gravel bars to the plant. Its sand-gravel section has a capacity of 260 cu. yds. per hr. and makes 4 sizes—3"-1½", 1½"-¾", ¾"-4 mesh, and minus 4 mesh sand.

The plant's combined aggregate capacity is 8000 cu. yds. per 20-hr. day. Exceptionally efficient design, combined with automatic inter-coupled controls, make it possible to operate this large and complete aggregate plant with only about six men. Uninterrupted performance of Tel Smith equipment has made it possible to exceed the planned concreting schedule.

Today's Tel Smith Plants are producing under pressure, to win the war. Tomorrow's Tel Smith Plants will do an even better job for you, at still lower over-all costs. Get Bulletin EP-11. G-3

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Transit-Mix Dealer tells Experience with

POZZOLITH

(CEMENT DISPERSION)



NEW BRIGHTON CONCRETE COMPANY

381 ENDICOTT BUILDING - ST. PAUL, MINNESOTA
Transit-Mixed Concrete

OFFICE: SA. 1891
MI. 7378
PLANT: NE. 7489

May 4th, 1942

The Master Builders Co.,
7016 Euclid Avenue,
Cleveland, Ohio.

Gentlemen:

We have used several carloads of Pozzolith in the concrete furnished to the Twin City Ordnance Plant at New Brighton, Minnesota, and wish to say our experience with this material has been very satisfactory.

We have found that the use of Pozzolith lowers the amount of water necessary for the concrete, thereby increasing the strength, and it also gives much better workability to the concrete. Our cylinder tests have shown exceptionally uniform results and the cement finishers, particularly on the floor slabs, are highly pleased with the Pozzolith concrete.

Yours very truly,

NEW BRIGHTON CONCRETE COMPANY.

By

Albert R. Shiel

ARS:Z

Find out how Pozzolith reduces ready-mix costs 15 to 30 cents per yard. Write for illustrated booklet which tells how Cement Dispersion produces greater placing speed, workability, watertightness and durability.

THE MASTER BUILDERS CO.
CLEVELAND, OHIO TORONTO, ONTARIO

MASTER BUILDERS



6 CONES now serve this company

SHORTHEADS make the
minus half inch sizes

This four-foot Symons Short Head Cone Crusher reduces gravel to minus half inch at the plant near Brighton, Michigan.



We are proud to serve our country
and to have been awarded the Navy
"E" for EXCELLENCE in production.

The American Aggregates Corporation, one of the country's larger producers of crushed materials, is another consistent user of Symons Crushers, having six four-foot Cones installed among its various plants. Because of the satisfactory performance given by earlier installations of Standard Cones, Short Heads were later added to meet a growing demand for greater quantities of minus half inch sizes. With the Short Head, increased tonnages of smaller sized materials as now required can be quickly and profitably produced. Rehandling, recrushing and stock piling are eliminated.

If you have a growing market for finely crushed materials, investigate the advantages of the Short Head for making the minus half inch sizes.

NORDBERG MFG. CO. MILWAUKEE WISCONSIN
NEW YORK • LOS ANGELES • LONDON • TORONTO

SYMONS CONE CRUSHERS

CALLING **ALL** CONTRACTORS AND OPERATORS!

Enlist

TO CONSERVE CONSTRUCTION EQUIPMENT

Show others that you are helping to make your equipment last longer and work faster. Regardless of the type or make of your equipment, if you will sign and mail the pledge form below, we will send you a colorful red, white and blue emblem to put on your machine (or it can be used on a truck or passenger car). Then it's up to you to practise what you have pledged—it's one big way you can contribute to victory.



*Get
This Emblem
Sign
This Pledge*

*New
Emergency*

"FIX-IT"

HANDBOOK for LORAIN OWNERS

To assist our customers in keeping their machines in operation, we have just prepared a 24-page handbook of suggestions and ideas on how emergency repairs may best be accomplished. Indicate on the pledge form if you want us to send you a copy.



THE THEW SHOVEL COMPANY, Lorain, Ohio

I hereby pledge that I shall do all in my power to prolong the life of any construction equipment in my ownership or care regardless of type or make.

I realize that it is my responsibility to avoid time-consuming delays caused by mechanical breakdowns and will see that frequent inspections are made and that necessary adjustments and repairs are promptly taken care of.

I will avoid waste of parts and materials and will eliminate any abuse of my equipment due to non-recommended operation.

Signed _____

Street Address _____

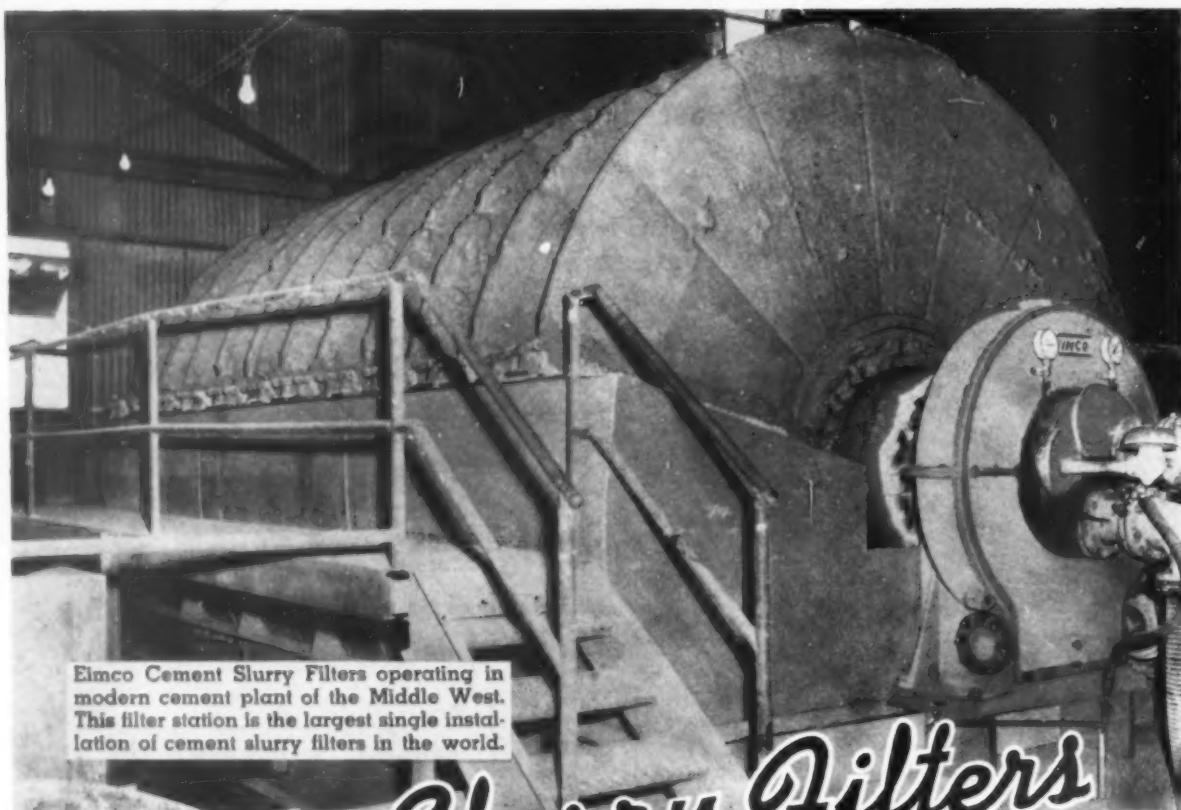
City _____

State _____

"FIX-IT" Handbook Wanted _____

Lorain Model No. _____

Serial No. _____



Eimco Cement Slurry Filters operating in modern cement plant of the Middle West. This filter station is the largest single installation of cement slurry filters in the world.

Eimco Slurry Filters *for the Cement Industry*

Eimco Cement-Slurry Filters are designed, engineered and built in answer to the many problems of filtration peculiar to the Cement Industry—not just "another filter" following conventional lines and offered on a "take-it or leave it" or "make-it-work" basis. Eimco Cement-Slurry Filters were developed through the cooperative efforts of Cement Plant Operators and Eimco Filtration Engineers; after exhaustive studies of maintenance problems; fuel savings; reduced moistures; laboratory tests and the many questions that confront the in-

vestigator. As a result, numerous new features can be found in the Eimco Cement-Slurry Filter—one of many, 25% INCREASE IN BAG LIFE due to improved discharge of slurry cake.

Eimco Filtration Engineers are available, without obligation, to consult with plant operators, run laboratory tests, develop installation lay-outs, make recommendations to the end that the progressive Cement Industry may further increase production and reduce operating costs!

THE EIMCO CORPORATION

SALT LAKE CITY, UTAH, U.S.A.

NEW YORK
120 Broadway

CHICAGO,
111 W. Washington St.

EL PASO
Mills Bldg.

SACRAMENTO
1217 7th St.

★ ★ ★ ROCK PRODUCTS ★ ★ ★

MUST
POINTERS
FOR EVERY
OPERATOR

*NEWS
FLASHES*

COMMENTS
BRIEFS &
INDUSTRY
HIGHLIGHTS

IN TIME OF WAR PREPARE FOR PEACE

Washington, D.C.: Brigadier General Philip B. Fleming, Federal Works Administrator, has announced that the first actual engineering work on post-war public construction - a projected highway building program to cost nearly \$500,000,000 - is well under way. The engineering work, extending from conception of the improvements through surveys and the preparation of detailed plans and specifications ready for the contractors' bids, is going forward as a joint Federal-State undertaking. It is being financed from a special \$10,000,000 fund which the Congress authorized in the Defense Highway Act of 1941 with the requirement that the States match funds for projects according to the usual Federal-aid plan.

CONVERSION OF PLANT TO WAR WORK

Philadelphia, Penn.: Another (see last month's News Flashes) large Eastern sand and gravel producer is using part of his repair shop for war work. This producer has entered into a contract with a local steel company for rough machining of steel disks "to be used as calling cards when our boys visit Berlin and Tokyo" - in other words, torpedo tubes. These are 600-lb. disks, 31 in. in diameter, 2 7/8 in. thick, that have been pressed from steel billets. They are machined to 30 in. diameter, about 2 in. thick and then weigh 400 lbs. A long unused planer and a lathe are used. Later the plant expects to rough machine barrels for small cannon.

ESSENTIAL JOBS IN CONSTRUCTION

Washington, D.C.: The Selective Service System with the approval of the War Manpower Commission has designated certain jobs in the construction industry essential - this for guidance of local draft boards in considering deferments. Of course, first of all, the construction project itself must be essential. The list includes: cost accountant; barge captain; blacksmith (all around); blaster (all around); boilermaker; carpenter (all around); crane operator, gantry; derrick-boat captain; derrick-boat operator; dredge captain, dredge mate and dredge leverman; electrician (all around); engineer, professional and technical; construction superintendent; foreman. (This title covers foremen who are engaged in supervisory duties in connection with the construction industry, and who exercise independent judgment and assume extensive responsibility for the work of those they supervise); hoisting engineer; lay-out-man, structural steel; machinist (all around); manager, employment and personnel; mechanic, maintenance; mechanic, refrigeration; millwright; painter (all around); pipe and steam fitter (all around); plumber (all around); power-shovel and crane operator; rigger, construction equipment; sheet

metal worker (all around); structural steel erector; tugboat captain, engineer, mate; welder (all around); wharf builder; wire spinner, and yardmaster.

STREAM LINED CONVENTION EXAMPLE

Chicago, Ill.: The 22nd annual convention of the Pullman Porters Benefit Association of America opened with only seven men of a membership of 6217 of the traveling fellows in the nation, says the "Chicago Tribune." Apparently all the 6210 others were too busy taking care of the tremendous load of troops and civilians to travel to their own convention. "I guess we've set a world's record for wartime streamlined conventions," said Grand Chairman E. M. Graham.

RESTRICTED SALE OF NEW AND USED EQUIPMENT

Washington, D.C.: War Production Board's new Order L-192 provides for the allocation of used equipment. The order divides construction equipment into two groups - list "A," comprising the major types of equipment, shovels, cranes, etc.; and list "B," made up mostly of accessory items, buckets, drill steels, etc., and most types of concrete equipment except batching plants. Anyone selling a piece of used equipment of the list "A" type is required to report the fact to W.P.B., 30 days before the sale, on form WPB-1159. Thereafter, W.P.B. can tell him to sell it to someone else instead, if that seems desirable. For controlling sales of new equipment, the order sets up a third list, "C" of the more critical types on lists "A" and "B." Technically, anyone may place an order for list "B" equipment unless it is also on list "C." To place an order for list "A" equipment, not on list "C," an application must be made to the nearest regional office of W.P.B. on form PD-556. List "C" equipment from list "A" may be bought only by government war agencies, while list "C" equipment from list "B" may be bought both by such agencies and by their contractors. A further control over sales of new equipment is established by requiring that manufacturers of equipment submit to W.P.B. each month their production and delivery schedules. For sales of repair parts for use on projects of the war agencies, the order provides that the repair part purchase shall carry the same priority rating as the project on which the parts are to be used. Except with specific W.P.B. approval, it is forbidden to buy repair parts in any quarter-year costing more than 5 percent of the cost of the equipment to be repaired.

CONVERTING COAL TO NATURAL GAS

Chicago, Ill.: In our August 1942 Cement Issue we speculated on the possibility of pulverizing coal at the mines and delivering it in pipe lines to customers. We have since learned that research work now in progress at Purdue University contemplates a new process of converting coal to natural gas. If this is ever done, it certainly would revolutionize the coal industry. The new gas would be very different from present manufactured coal gas. Its B.t.u. content would approximate that of natural gas, which is an ideal fuel for lime and cement kilns.

The Staff



Here's *Exactly* Why The **CONCAVE SIDE** Saves Belts-Saves Rubber-Saves Power!

Pick up any V-belt that has straight sides. Bend that V-belt while you grip its side-walls as in the picture above. You will feel the sides of the belt bulge out—as shown in Figure 1 on the right. Clearly, that out-bulge gives the belt a shape that does not fit its sheave groove.

Now look at Figure 2. There you see what happens when you bend a belt that is built with the patented Concave sides. You get a similar change in side-wall shape—but what a different result! The precisely engineered Concave side becomes perfectly straight. There is no out-bulge—the full side-width of the belt uniformly grips the sheave groove wall. This means *uniform wear—longer life*—a saving in belts for you, a saving in rubber for the Nation. In addition, this full side-width grip on the pulley carries heavier loads without slippage—another saving of belts and a saving in power too!

Only belts built by Gates are built with the Concave side, a Gates patent.

What Happens
When a
V-Belt Bends



FIG. 1



FIG. 2

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

Chicago, Ill.
549 West Washington

New York City
215-219 Fourth Avenue

Birmingham, Ala.
405 Liberty National Life Bldg.

Los Angeles, Cal.
2240 East Washington Blvd.

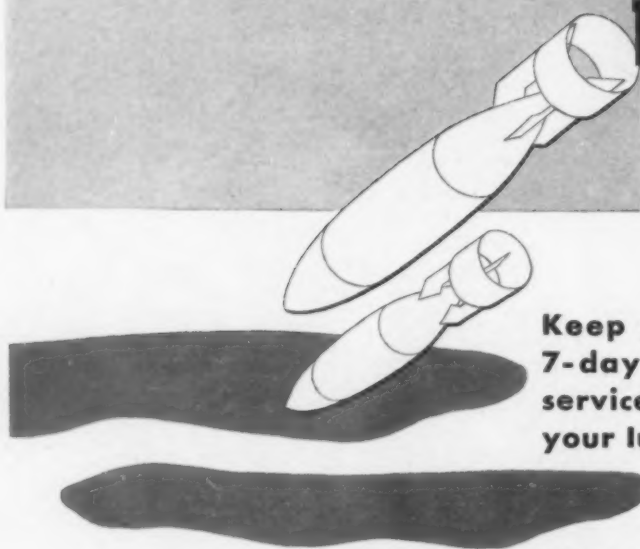
Denver, Colo.
999 South Broadway

Dallas, Tex.
2213 Griffin Street

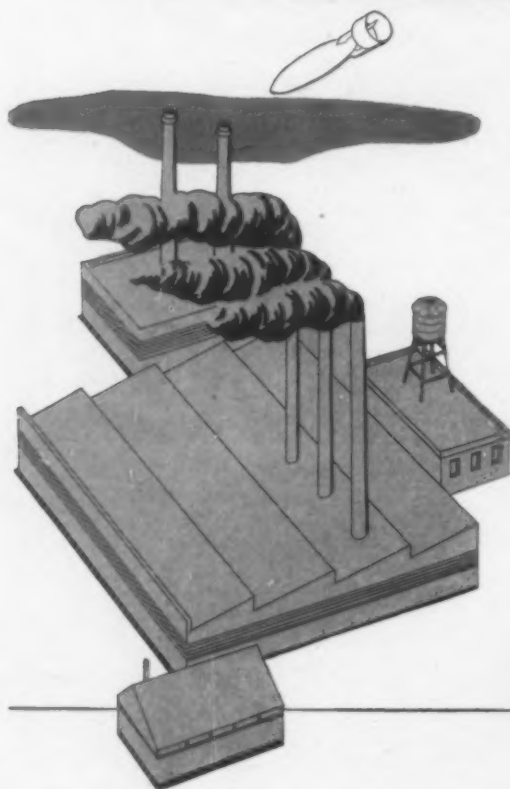
Portland, Ore.
333 N. W. 5th Avenue

San Francisco, Cal.
2700 16th Street

*Excessive wear is a greater hazard
to American Industry than*
bombs!



Keep your equipment in condition for 7-day-week production—call in a Gulf service engineer for helpful counsel on your lubrication problems.



PRODUCTION equipment gets a lot of punishment these days. Worked two to three times the peacetime average, the tendency toward excessive wear is that much greater.

So preventive maintenance—steps taken to minimize breakdowns and mechanical troubles and to stretch out periods between overhauls—is of vital importance. Saved machine time means more production!

The basis of *effective* preventive maintenance is proper lubrication—the right lubricant properly applied to each moving part. Here Gulf can be of considerable assistance. With a large staff of trained lubrication engineers — plus quality oils and greases that provide an extra margin of protection—Gulf is well prepared to help you install the kind of lubrication practice that will insure most efficient machine performance and fewer production lags caused by excessive wear. Call in a Gulf service engineer today and get the benefit of his helpful counsel.

The services of a Gulf engineer are quickly available to you in 30 states from Maine to New Mexico. Write or 'phone your nearest Gulf office today. Gulf Oil Corporation • Gulf Refining Company, Gulf Building, Pittsburgh, Pennsylvania.



*Call in a Gulf service engineer
to help step up production—*

RAYMOND IMP MILL

... for Special Grinding and
Separating Operations

SIMPLIFIED PRODUCTION

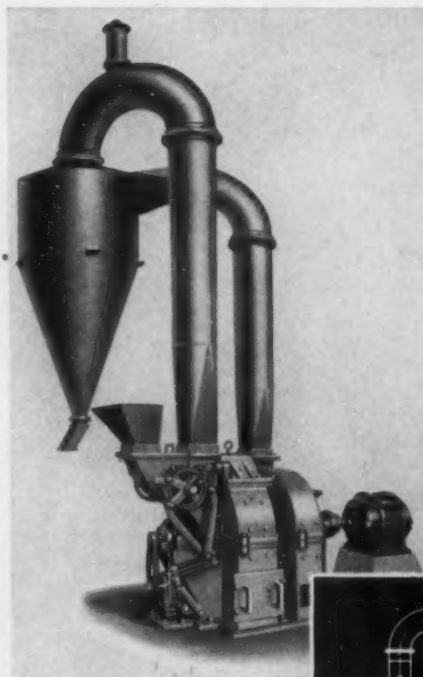
with a unit machine, combining two or more operations in a single-cycle process . . . that is the Raymond IMP MILL Method, which offers a saving in time and economy in manufacture of powdered materials.

BURNT LIME—The Imp Mill is equipped for air separation and has a cyclone collector with connecting piping. It pulverizes and classifies the material, delivering a uniform product. See illustration of mill at right for typical arrangement.

CALCIUM SILICATE—The Imp Mill operates in closed circuit with a Mechanical Air Separator, arranged as shown in the flow sheet below. The material is reduced to a fine powder and classified to 99.5% passing 150-mesh. The operation is entirely dustless.

CALCINED GYPSUM—The Imp Mill is provided with a furnace for supplying heat to the system. The gypsum is dried, ground and classified in one continuous process, delivering a uniform finished material for the manufacture of wallboard.

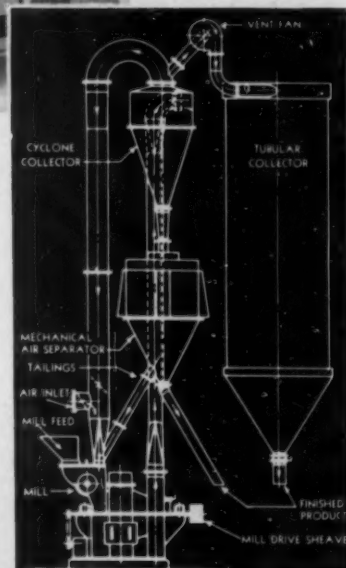
DIRECT FIRING—The Imp Mill makes a compact and economical direct-firing unit for operations where only small capacities of powdered fuel are required, such as in firing stills and small boilers and kilns.



RAYMOND Imp Mill
with standard set-up.



If you have a problem involving a combination of drying, grinding and separating . . . write for Catalog 41.



Flow Sheet showing
closed circuit arrangement
of Imp Mill, Mechanical
Air Separator.

RAYMOND PULVERIZER DIVISION

COMBUSTION ENGINEERING COMPANY, INC.

1307 North Branch Street

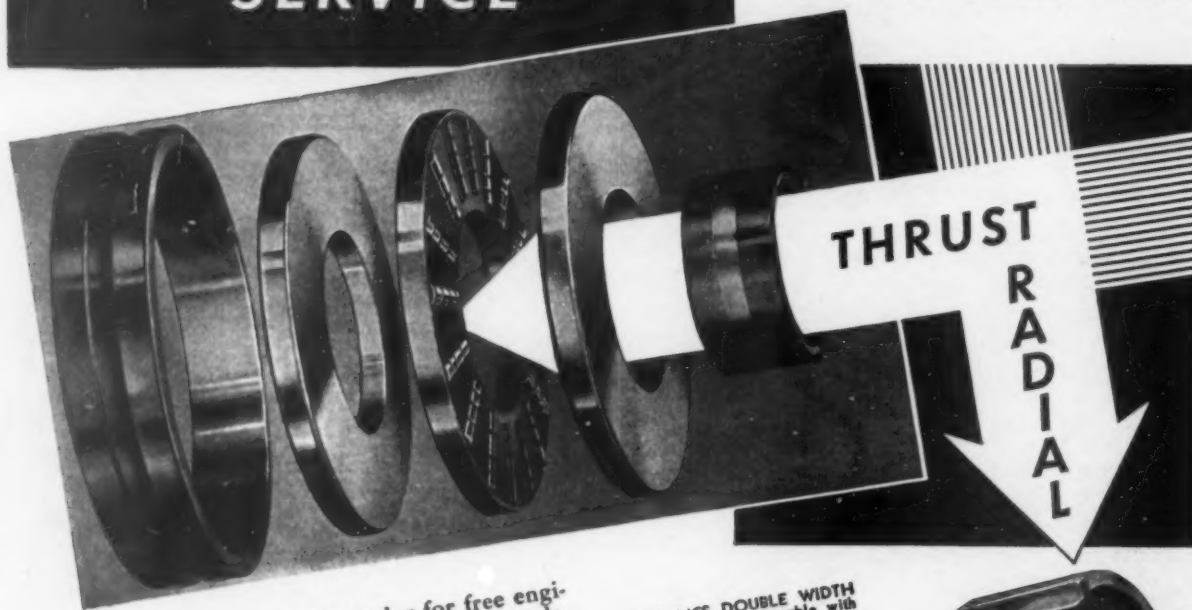
CHICAGO

Sales Offices in Principal Cities • • • In Canada: Combustion Engineering Corporation, Ltd., Montreal

When Shifts Run
'ROUND THE CLOCK,
Shift to
ROLLWAY
RIGHT-ANGLED LOADING
for
**BETTER BEARING
SERVICE**

● The load which can be safely applied to a bearing depends more on *how long* and *at what speeds* the load is carried than it does on the crushing strength of the metals. That's why today's full-speed, 'round-the-clock operation definitely calls for the higher service factors provided by Rollway's right-angled loading of solid-cylindrical roller bearings.

Here's what it means: Rollway splits every load into its two simplest components of pure radial and pure thrust. It carries each of these components at right angles to the axis of solid, cylindrical rollers. Oblique loading is eliminated. Sliding friction is reduced to the vanishing point. And a more compact bearing assembly with more massive rollers of uniform cross-section is the result. You reap the benefits in longer bearing life, higher machine speeds, less down-time and less service attention.

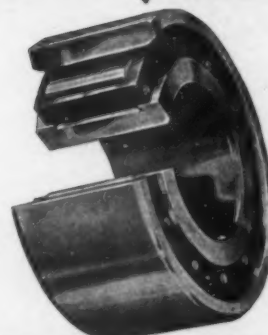


★ Send us your plans today for free engineering analysis and bearing recommendations. Most applications require only American standard metric dimensions and tolerances that need no costly extra tooling or different machine set-ups.

TYPE MCS DOUBLE WIDTH
RADIAL, interchangeable with
standard double-width bearings
made to S.A.E. dimensions.

TYPE SDT DOUBLE ACTING
THRUST for slow-speed service
or for higher speeds where the
direction of thrust is not reversed
frequently or at high speeds.

REMEMBER—you can usually
change over from
other bearings to Rollway's of
higher load capacities without in-
creasing boundary dimensions.



ROLLWAY

BEARING COMPANY, INC., SYRACUSE, N. Y.

BUILDING HEAVY-DUTY BEARINGS SINCE 1908

BEARINGS

WESTERN UNION

CLASS OF SERVICE

This is a full-rate Telegram or Radiogram unless its deferred character is indicated by a suitable symbol above or preceding the address.

A. H. WILLIAMS
PRESIDENT

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEVER
FIRST VICE-PRESIDENT

1211

SYMBOLS

DL = Day Letter
NT = Night Telegram
EC = Deferred Cable
NLT = Cable Night Letter
Rg = Radiogram

The time shown in the date line on telegram and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

WU4 TWS GOVT PAID 3=WASHINGTON DC SEP 17 1942 848P
THE MARION STEAM SHOVEL COMPANY=
MARION OHIO=

AS CHAIRMAN OF THE U. S. MARITIME COMMISSION BOARD OF
AWARDS, I TAKE PLEASURE IN ADVISING YOU THAT THE BOARD,
IN RECOGNITION OF YOUR OUTSTANDING PRODUCTION ACHIEVEMENT,
HAS AWARDED YOUR PLANT THE MARITIME "M" PENNANT, THE
VICTORY FLEET FLAG AND MARITIME LABOR MERIT BADGES FOR
ALL YOUR EMPLOYEES=

H L VICKERY COMMISSIONER US MARITIME COMMISSION.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE



R. P. IN WORLD WAR

WHAT THE WAR HAS DONE TO NONMETALLIC MINERAL INDUSTRIES AND NOT OVERLOOKING WHAT PEACE WILL BRING



We have gone direct to leading operators to find out how we stand.

They have generously responded.

They have told us about personnel shortages.

About difficulties in keeping operations going.

About their policies for rebuilding staffs and plants.

What conditions they expect to meet in 1943.

What conditions will prevail after peace is won.

All this is in line with ROCK PRODUCTS' long standing policy of letting the readers—the active operators in the industry—really write the book.

For we have never believed any editorial staff ever assembled could substitute for the men in the industry who do things.

The job of ROCK PRODUCTS' editorial staff, experts as they are, is always aimed primarily at stimulating thought and action by the leaders in the industry.

That's what makes ROCK PRODUCTS read and believed in by its readers. That is the foundation of editorial prestige.

There are readers (operators) who lead; and readers (operators too) who follow.

The wise advertiser is not the one who tries to blanket all alike, because the kind of medium that appeals to all does not exist. It would be dull reading to the go-getters and have little appeal to the followers.

The wise advertiser concentrates on selling the active go-getters, the ones with initiative, the ones who try new things, new methods; the ones who look ahead to survive in war and thrive in the peace to come.

Because these active ones, the progressive ones, the farsighted ones, are the ones that make the initial installations, introduce new methods of processing; in short they are the ones who sell your machinery and equipment. Because the followers buy what the leaders buy. The leaders read and are sold by advertising. The followers are seldom sold by advertising. They have to be shown.

That's why ROCK PRODUCTS advertisers stick with it year after year—and the readers stick too, and swear by ROCK PRODUCTS.

The January Annual Review Issue is an example of the faithfulness of reader support.

It will present a True Picture of the Rock Products Industry at War and the Prospects Afterwards.

Be sure you are represented with dominant advertising space in the coming January issue of ROCK PRODUCTS.



ROCK PRODUCTS

309 WEST JACKSON BLVD.



CHICAGO, ILLINOIS

**IT'S A NATURAL
FOR SAVING TRUCKS,
TIRES, AND MEN**



Can You Afford to do Without The Dempster Dumpster—

—this is the question every operator should consider if he is doing a hauling job where loading is done by hand.

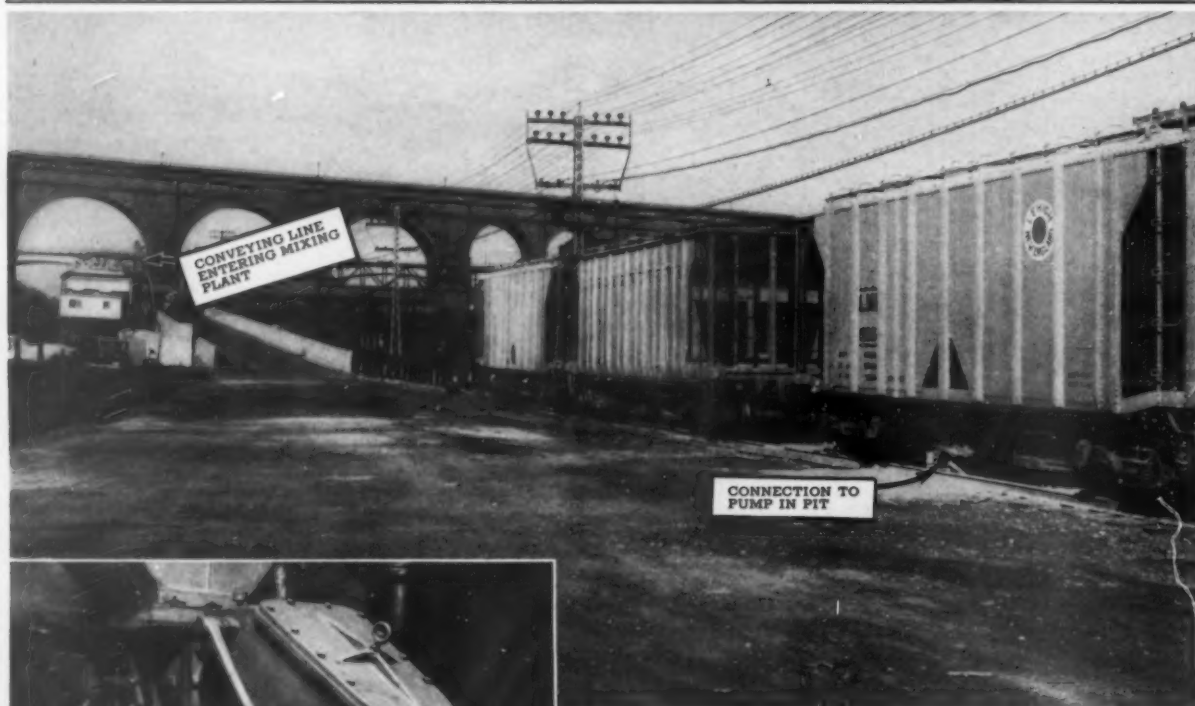
In practically every industrial field Dempster-Dumpsters are going to work in growing numbers because of the very simple fact that eliminating trucks, means eliminating tires, gas and labor, and lowering these costs means saving money. On the other hand, you may need increased production. In this case you can increase the efficiency of each truck one to four hundred percent, depending upon conditions, with a Dempster-Dumpster Unit and a number of detachable bodies. There is a Dumpster body built for transporting any conceivable type of material, from the very light in weight to the heaviest, dust and liquid included. Don't assume that your problem is different—that the Dempster-Dumpster system of hauling is not applicable to your problem. Such cases, without investigation, have happened, only to discover later that this equipment was exactly the type they needed. Our most difficult job in our advertising is to make the wide use and flexibility of the Dempster-Dumpster equipment clear to the reader.



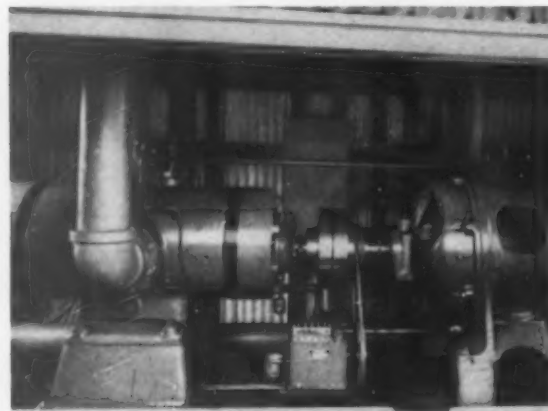
Every job is different. A single Dumpster unit may serve four or five bodies in one case and in another up to fifty bodies or even more. Write for completely illustrated manual that explains dozens of installations of all types. We will appreciate the opportunity of submitting recommendations on your hauling problems without obligation. Dempster Brothers, Inc., 3122 Springdale, Knoxville, Tennessee.

DEMPSTER DUMPSTER

James Norton uses Fuller Equipment



Fuller-Kinyon Pump in pit underneath railroad tracks.



Fuller Rotary Single-Stage Compressor which furnishes air for the Fuller-Kinyon System.

For unloading and conveying bulk Portland cement

James A. Norton, Inc., New York City, takes full advantage of Fuller equipment for unloading and conveying bulk Portland cement. All cement is received in hopper-bottom cars and "spotted" directly over a Fuller-Kinyon Pump installed in a pit underneath the railroad tracks. From this point cement is pumped through a pipe line to the mixing plant, a distance of approximately 700 feet, shown in the upper left-hand corner of photograph above.

Air for transporting the cement is furnished by a Fuller Rotary Single-stage Compressor.

Convey the Fuller-Kinyon way . . . power, installation, maintenance and operating costs for the average system are lower than that of any other. Minimum of supervision. Layouts are extremely simple, pipe lines can be hung overhead or buried under ground. Material can be conveyed and distributed to any number of bins to any remote part of the plant.

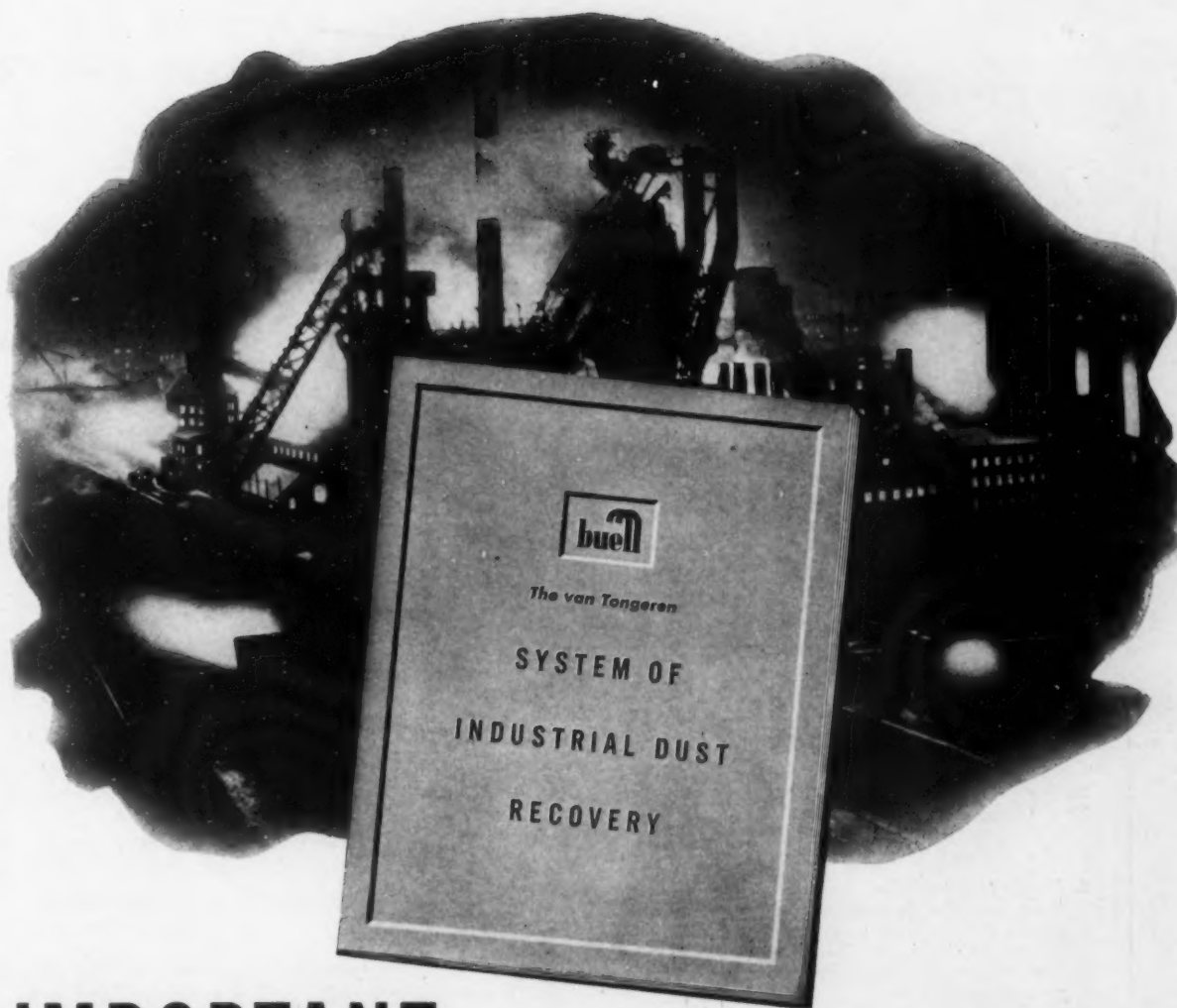
P-55

FULLER COMPANY

CATASAUQUA — PENNSYLVANIA

CHICAGO—Marquette Bldg.

SAN FRANCISCO—Chancery Bldg.



IMPORTANT TO WAR PRODUCTION PLANTS

This New, Informative, 28-Page Book

Efficient dust recovery is important to every branch of war production...aviation, chemicals, dehydrated foods, machining, metal working, processing, rock products, and many others. All these can use Buell Dust Recovery Systems to save material, increase production, and insure quality.

The wide use of Buell Dust Recovery Systems

by so many of America's great industrial concerns is their best advertisement. A representative list of Buell users shows *more than half with two or more installations!*

The new book shown above explains Buell's seven *plus* advantages, of particular interest to war plants. Send for your copy today. Ask for *Bulletin R-12*.

BUELL ENGINEERING COMPANY, Inc.

2 Cedar Street, Suite 5000, New York

Sales Representatives in Principal Cities

CONSULT BUELL *First* IN DUST RECOVERY

for Chemical • Rock Product • Metallic • Food • Flue or any other dusts



The eyes of all America are upon the United States Treasury Roll of Honor appearing in the "Payroll Savings News." For copy write War Savings Staff, Treasury Department, Washington, D. C.

HOW TO "TOP THAT 10% BY NEW YEAR'S"

1. **Decide to get 10%.**
It has been the Treasury experience wherever management and labor have gotten together and decided the job could be done, the job was done.
2. **Get a committee of labor and management to work out details for solicitation.**
 - a. They, in turn, will appoint captain-leaders or chairmen who will be responsible for actual solicitation of no more than 10 workers.
 - b. A card should be prepared for each and every worker with his name on it.
 - c. An estimate should be made of the possible amount each worker can set aside so that an "over-all" of 10% is achieved. Some may not be able to set aside 10%, others can save more.
3. **Set aside a date to start the drive.**
4. **There should be little or no time between the announcement of the drive and the drive itself.**
The drive should last not over 1 week.
5. **The opening of the drive may be through a talk, a rally, or just a plain announcement in each department.**
6. **Schedule competition between departments; show progress charts daily.**
7. **Set as a goal the Treasury flag with a "T."**

But there is still more to be done. By January 1st, 1943, the Treasury hopes to raise participation from the present total of around 20,000,000 employees investing an average of 8% of earnings to over 30,000,000 investing an average of at least 10% of earnings in War Bonds.

You are urged to set your own sights accordingly and to do all in your power to start the new year on the Roll of Honor, to give War Bonds for bonuses, and to purchase up to the limit, both personally and as a company, of Series F and G Bonds. (Remember that the new limitation of purchases of F and G Bonds in any one calendar year has been increased from \$50,000 to \$100,000.)

TIME IS SHORT. Our country is counting on you to—

**"TOP THAT 10%
BY NEW YEAR'S"**



Save with War Savings Bonds

This space is a Contribution to America's All-Out War Effort by ROCK PRODUCTS

★ ★ ★ ★
*Cut that Cost
 with*
CONTINENTAL IDLERS



A LERT OPERATORS are reducing their bulk material handling cost by installing Continental Belt Conveyors. One large cement plant replaced a railroad between quarry and mill with Continental Belt Conveyors. Rock is crushed in the quarry and transported one-and-one-half miles to plant at a cost of only a few cents per ton.

If you are contemplating the installation of new conveyors, or the replacement of idlers on old conveyors, be sure to make a thorough investigation of Continental Idlers before you buy. You will be assured of years of uninterrupted service, minimum maintenance, and longer belt life.

Continental Idlers have what it takes—they are designed and built to do your job. They will do your job better and cost no more than ordinary idlers. Crushed stone, cement, slag, sand, gravel, and similar products are daily riding for a few cents per ton via Continental Conveyors.

Write today for a copy of Bulletin ID-103 so you can better judge for yourself the superior features of this Precision built, Streamlined, Efficient CONTINENTAL CONVEYOR IDLER.

INDUSTRIAL DIVISION
Continental **GIN COMPANY**
 BIRMINGHAM, ALABAMA
 ATLANTA . . . DALLAS . . . MEMPHIS

P&H

ELECTRIC SHOVELS



A P&H 2½ Yd. Electric Shovel Loading Coal.

*Backing up
the War effort.*



MORE for your excavator dollar.



Awarded the Navy "E" for excellence in war production, P&H displays it also as a pledge of future effort.

Behind Uncle Sam's war effort, the big P&H Electric Shovels are in there digging where it counts—in the way that counts—swiftly, steadily!

MORE POWER per yard of dipper than on any other excavators.

GREATER STRENGTH per pound of weight with tougher construction of rolled alloy steels.

EXTRA RIGIDITY with both upper and lower structures welded as single units.

These and other basic P&H advantages are found throughout the entire line of P&H excavators, large and small.

General Offices: 4410 West National Avenue, Milwaukee, Wisconsin

HARNISCHFEGER CORPORATION

EXCAVATORS • ELECTRIC CRANES • ARC WELDERS  HOISTS • WELDING ELECTRODES • MOTORS

Processing 6,000 TONS per day

On the Largest Industrial Job
in the History of the West!



PIONEER Aggregate Installation to Process 400,000 cu. yds. for the *Censored* Plant in Utah

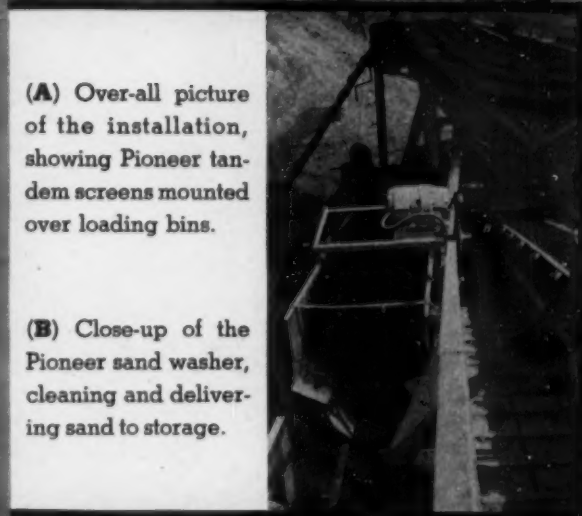
A Pioneer 48-V portable crushing plant, plus a Pioneer double deck tandem vibrating screen and two sand washers together with Pioneer conveying equipment make up this aggregate installation. It is producing all the concrete aggregate for the biggest industrial job in the history of the West.

This all-Pioneer installation is processing aggregate for over 400,000 cu. yds. of concrete. This is used in the construction of a major war plant. Aggregate, averaging 6000 tons per day, is graded in four sizes from sand up to 3 inches. An additional 200,000 cu. yds. of rock will be produced as rock ballast for the railroad spur.

Major war jobs demand the best in construction equipment. Pioneer is doing the job right . . . and with the greatest possible speed.



(A) Over-all picture of the installation, showing Pioneer tandem screens mounted over loading bins.



(B) Close-up of the Pioneer sand washer, cleaning and delivering sand to storage.

Pioneer[★]

ENGINEERING WORKS
MINNEAPOLIS • MINNESOTA



BUILT BY BUTLER: YOUR GUARANTEE OF TOP PERFORMANCE

READY MIXED CONCRETE PLANTS complete from conveyor hopper to discharge hose.

CENTRAL MIXING PLANTS engineered to fit the job.

SAND AND GRAVEL PLANTS from thirty tons to three thousand.

CONCRETE PRODUCTS PLANTS designed for modern methods.

BULK CEMENT PLANTS to fit every condition, for new installations and old.

BATCHING PLANTS to build America's vital highways and airports.

WEIGHING BATCHERS for all materials—fast, accurate, and efficient.

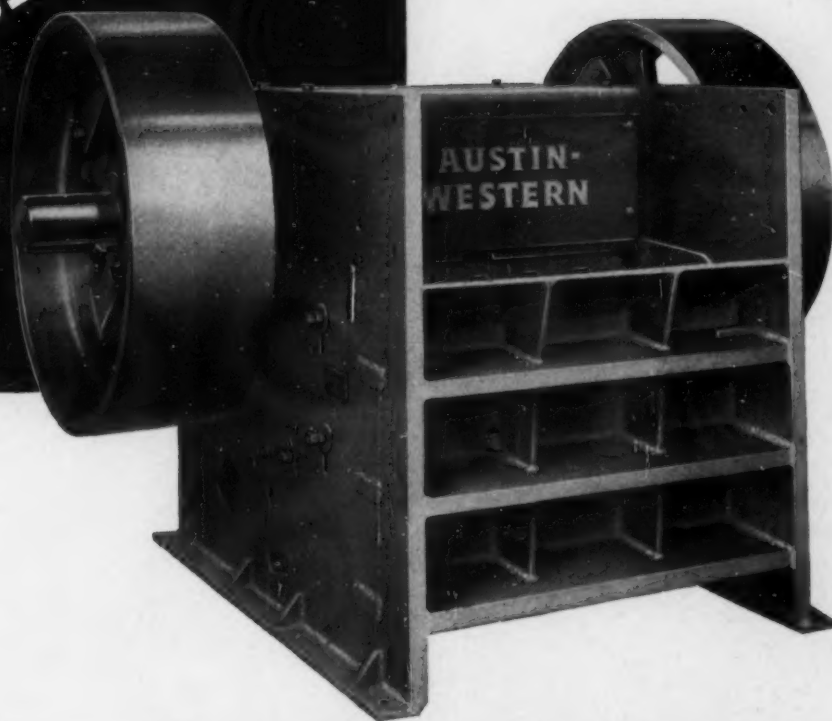
BIN GATES that are trouble-free and economical—for any bin, any material.

BUTLER

BIN COMPANY

WAUKESHA
WISCONSIN

MORE CRUSHING AREA PER MINUTE



Gives A-W Crushers Outstanding Output

● Numerous construction and design advantages are responsible for the continuous full-load production of A-W Crushers . . . day after day . . . year after year. Extra large shafts and immense self-aligning roller bearings make possible smoother operation at higher speeds. Deeper crusher jaws, set at a more nearly vertical crushing angle, increase output because the movable jaw moves more nearly parallel with stationary jaw.

A-W Jaw Crushers are made in the following sizes: 10" x 16" (bronze bearing); 10" x 20"; 10" x 36"; 12" x 20"; 15" x 20"; 18" x 38"; 21" x 38".

The A-W complete line of Crushing and Screening Equipment—all engineered to step up yardage, lower operating costs and prevent expensive delays—includes Roll Crushers in 30" x 18" and 40" x 22" sizes, conveyors, screens and bins for both fixed and portable plants.

Austin-Western's competent staff of trained men will gladly assist in the economical solution of your rock crushing problems . . . whether they be large or small . . . whether the requirements call for a complete new plan or the addition of equipment to modernize set-ups now in use. THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois.

MOTOR GRADERS
LOADERS
BLADE GRADERS
ELEVATING GRADERS
CRUSHING AND
SCREENING PLANTS

Austin-Western

DUMP CARS
TRAIL CARS
ROLLERS
MOTOR SWEEPERS
SHOVELS AND CRANES



The Axis started this war of machines... but Uncle Sam's Army is coming up fast with the weapons to finish it! One of the newest and most effective is this giant Mack Army Prime Mover.

***Made-to-Order
for the World's Toughest Customer...***

The Army's newest and biggest prime mover is probably the best single job in truck history. Most of its details can't be made public... but you can see for yourself that it's *big*. And we can tell you that it hooks up to a whale of a big gun, takes on a terrific load and goes almost anywhere except straight up. We're proud of it, at Mack, and with good reason. Proud that the Army called on Mack men and facilities to develop and build it. Proud, as Americans, that our fighting men are getting fighting equipment so fine. And proud that this, too, is "built like a Mack truck"... with all that phrase has stood for in ruggedness and reliability for forty-two years!



Mack Trucks, Inc., New York, N. Y. Factory branches and dealers in all principal cities for service and parts.



Mack

**TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS**

BUT U. S. WAR BONDS

IF YOU'VE GOT A MACK. YOU'RE LUCKY... IF YOU PLAN TO GET ONE, YOU'RE WISE!

"Saves us \$100 per month IN SHUTDOWN TIME!"

That's What the Simpson Brothers, Owners of Rose City Sand & Gravel Co., Say About Their Allis-Chalmers No. 322 Type "R" Crusher! Read All the Facts About This Remarkable Crusher that Costs Less than Any Comparable Machine on the Market Today!

Tramp iron? If that's been a source of interrupted production in your plant, here's the way one operator licks his problem of shutdown time . . . with an Allis-Chalmers Type "R" Crusher!

At Rose City Sand & Gravel Co., Portland, Ore., the Simpson brothers produce 25 yards per hour of minus $\frac{1}{2}$ " rock. The gravel comes from a large open pit, contains considerable tramp iron, which gets into the crusher several times a day.

When this happens, the Type "R" hydraulic relief device opens, the head drops, and the tramp iron passes into the discharge. Then a turn of the hand crank-operated "Speed-Set" Control resets the crusher head in a few seconds.

Contrast this with what happens when tramp iron gets into an ordinary crusher! At worst, the shaft may break . . . at best, the iron is flattened out with serious strain on the machine. Often the crusher is stalled making it necessary to pick out the rock by hand and possibly burn out the iron.

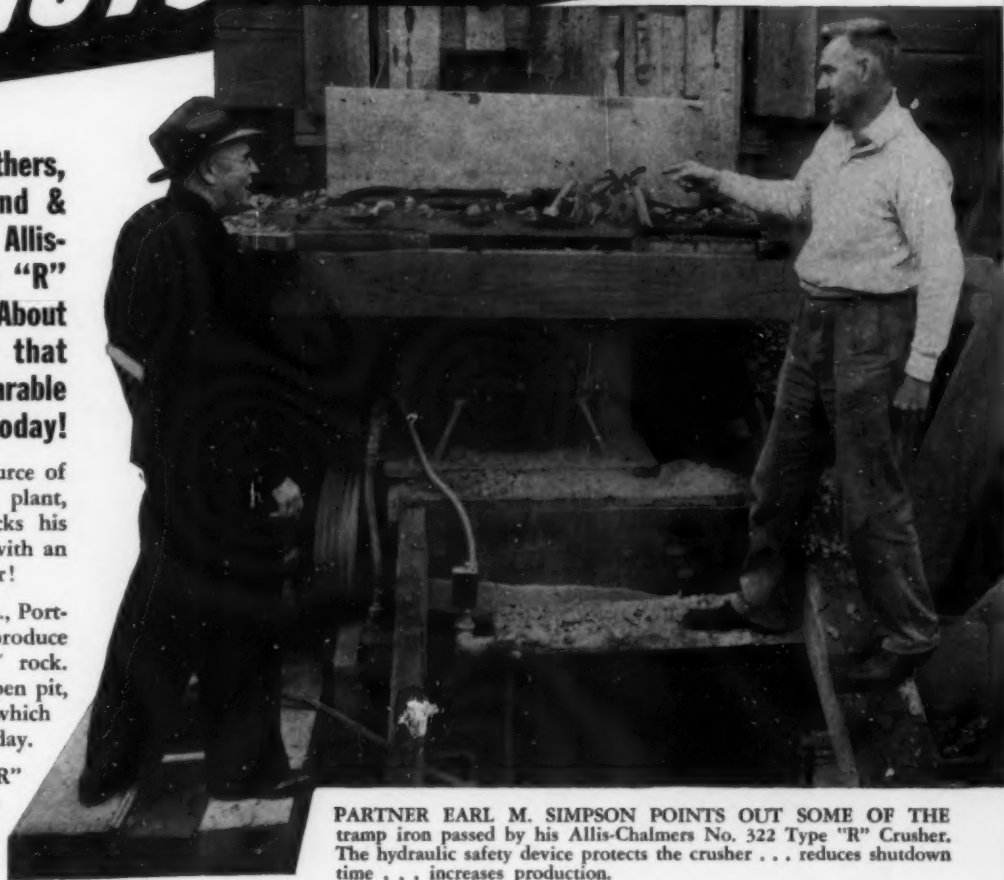
That's why partner John M. Simpson writes, "This safety device alone saves us at least \$100.00 per month in shutdown time and possible repairs. Our Type "R" produces more cube rock and less dust than the ordinary reduction crusher . . . and we now make considerably more Oregon and Washington state specification oil rock."

This is just one example of how Allis-Chalmers Cooperative Engineering can help operators increase their production. If a problem comes up in your plant, let us place our experience and facilities as the world's largest manufacturer of rock and ore reduction machinery at your disposal . . . help you get the right equipment for your job. Allis-Chalmers, Milwaukee, Wisconsin.

A 1506

*Get all-out
production
with*

ALLIS-CHALMERS COOPERATIVE ENGINEERING



PARTNER EARL M. SIMPSON POINTS OUT SOME OF THE tramp iron passed by his Allis-Chalmers No. 322 Type "R" Crusher. The hydraulic safety device protects the crusher . . . reduces shutdown time . . . increases production.



Fast, quick response to sudden loads, rugged power for tough work like this makes the BUDA an ideal engine for this husky Bucyrus Erie 45-B.

Above: Low-cost power for this Illinois crushing plant is supplied by an economical BUDA 5-DH-451 Diesel.

Below: A Model E-425 Buda powers this busy Austin Western Washing Plant.



makes tough jobs EASY

ON the really tough jobs the world over, operators report these facts about BUDA performance: lower fuel costs, less down time, lower maintenance costs, and longer engine life. It all adds up to more horsepower per dollar — a feature that will cut your costs on any job!

BUDA builds gasoline, Diesel, natural gas and butane engines from 15 to 250 H.P. There's a size and type of BUDA engine to deliver exactly the kind of power your shovel, crusher, washing plant, truck or locomotive requires. For outstanding performance — for reliable, year-after-year service at lowest cost — investigate BUDA'S complete engine line. Full details are yours for the asking.

THE BUDA CO.

HARVEY (Chicago Suburb) ILL.

GASOLINE and DIESEL ENGINES — 15 to 250 H.P.





PRIZE OFFER

FOR

Maintenance

HINTS and HELPS

For Publication in

ROCK PRODUCTS

WAR

Requires **INGENUITY**
Requires **RESOURCEFULNESS**
Requires **CONSERVATION**

*In the Use of Men
 Material and
 Equipment*

PRIZES

One \$100 War Savings Bond —First Prize
 Two \$50 War Savings Bonds—Two Next Best
 Two \$25 War Savings Bonds—Two Next Best
 Five \$10 In War Savings Stamps—Five Next Best

Space rates with a minimum of \$5 each will be paid for all other Usable Hints and Helps accepted by the Editors.

RULES

1. Any reader of ROCK PRODUCTS actually engaged in a rock products operation may offer a contribution.
2. The manuscript may be type-written or written long-hand, pencil or ink; spelling or grammar makes no difference—it is the usefulness or applicability of the idea or device as described that counts.
3. The manuscript should be accompanied by an illustration if possible. This may be a snapshot photo, pencil sketch, blueprint, etc.
4. The subject selected to be described may be any part of the operation—any phase of the production process. It may be on maintenance or repair of a piece of equipment or machinery; it may be a money-saving or maintenance idea on lubrication; an accident-prevention idea; a cost-keeping idea; a way of meeting labor or public relations problem—any subject made live by war conditions, or brought about largely by Ingenuity, Resourcefulness and Conservation as a result of war necessities.
5. In case of a tie for any of the prizes, duplicate prizes will be awarded to the persons tying.

JUDGES

The judges will be two prominent producers and the Editor-in-Chief of ROCK PRODUCTS.

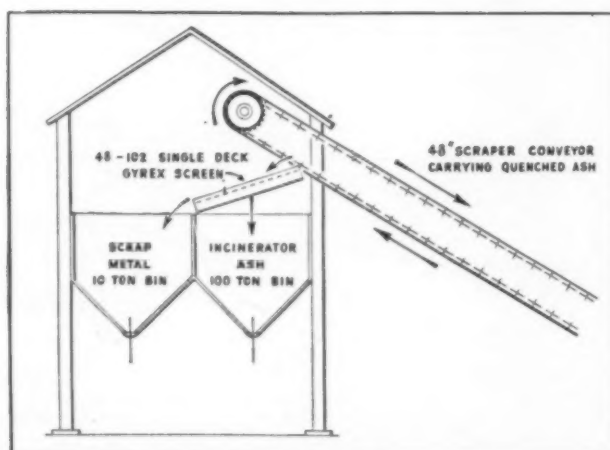
Address all contributions and communications to

War Ingenuity Contest
ROCK PRODUCTS

309 West Jackson Blvd.
 Chicago, Ill.

The contest is now open and closes on December 15, 1942. Prize winning HINTS and HELPS will be published in the January 1943 issue and following issues.

Act Now!



Pittsburgh Salvages 10,000 tons of Scrap —and nets \$60,000

Robins engineers and machinery often participate in interesting installations. Many of them are unusual, some actually unique. One in the latter classification came up recently in Pittsburgh. Mr. D. C. Agar, Managing Engineer of the Bureau of City Refuse, wanted to salvage the scrap in city residue agglomerate. The screening methods used in coke plants seemed a logical and economical method of separation.

■ A suspended-type Robins GYREX Vibrating Screen was installed where it would receive material from the final scraper conveyor . . . at a total cost considerably less than \$5,000.

■ At the present rate of recovery (and

current contract selling-price) the City of Pittsburgh is recovering 10,000 tons of scrap for the war effort . . . and will net \$60,000 a year from the salvaged metal.

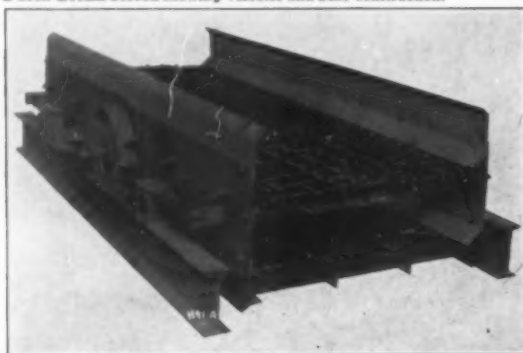
■ Robins engineers are at your disposal for advice regarding economical efficient applications of screens and materials handling machinery.

ROBINS

CONVEYING BELT COMPANY

PASSAIC • N. J.

2-deck GYREX Screen showing Vibrator and base construction.



For Material Aid
in
Materials Handling
It's ROBINS

THANK GOD FOR A MAN WITH COURAGE OF HIS CONVICTIONS!



SEWELL L. AVERY, president of Montgomery Ward & Co., who is better known to our readers as founder and chairman of the board of directors of the United States Gypsum Co., did what many another business executive probably has wanted to do; he challenged the actual authority of the War Labor Board to compel Montgomery Ward & Co. to accept closed shop and the check off. Mr. Avery, like Henry Ford, has had the reputation of being an executive of the old school, in popular language a "die-hard" individualist, who still believes business has some rights and responsibilities in management, and business leaders a patriotic duty to defend the American system of free enterprise.

We have quoted from Mr. Avery's statement elsewhere in this issue, and his company used much newspaper advertising space to present its case to the public. He "believes that the W.L.B.'s demands not only violate the fundamental principles of liberty but are economically unsound and are illegal under the terms of the National Labor Relations Act." There are a great many other people who think so too.

Where compulsory union membership has been resisted before, the objector, as in the case of Henry Ford, always has been a war implement manufacturer, and the Washington administration has been able to wield a big stick. Here, however, there was no excuse for the Federal Government to step in and take over the business of a great mail order house. The chief sufferers, aside from thousands of stockholders, would have been the hundreds of thousands of farmers and people of modest means throughout the nation, who are the company's customers.

Whether one agrees with Mr. Avery, or thinks he is behind the times, we all ought to be glad to see a man with the courage of his convictions, ready to do battle for his concepts of the American way of life. We grant that he may stand for a lost cause—that his conception and the popular conception may be quite different; but it is time that someone makes an honest attempt to stem the tide of *administrative regulations* which have had the force of regularly enacted law.

The issue is really more comprehensive than appears on the surface. With forced recruiting of manpower in the offing, a few far-sighted people—and we mean common, ordinary people, who are going to be pushed around—are asking themselves: "Are we going to be compelled to join labor unions and pay tribute to labor racketeers if the Government compels us to leave our present jobs and accept work in munitions plants?" Are we? If the President attempts this, which would be the natural outcome of his present order, we believe

our country is going to be shaken with a wrath never before experienced.

So far the New Deal administration has acquiesced in compulsory union membership on Government contract jobs. It has countenanced exorbitant initiation fees, often paid to plain racketeers, provided they were the right political complexion. Will it say to John Jones, "You must quit your job as a junior law partner and work for Michael Angelo, contractor for the Government, and you must join the union which Mr. Angelo's men now belong to?"

Perhaps we have got so used to having the President say things, which subsequent developments have shown apparently he didn't mean, that we pay little attention and soon forget. We are glad, therefore, that Mr. Avery did remind the W.L.B. of the President's promise, just a year ago, that he would not order, nor would Congress pass a law, compelling anyone to join a labor union against his will. We don't know how he could promise what Congress would or would not do, but he did; and nobody seemed to question it then. Maybe after January 2 the President will not be quite so confident about what Congress will or will not do.

It is unfortunate for Mr. Avery that he has been an outspoken opponent of nearly everything relating to the New Deal. It may cause many people to discount his stand on this particular issue, and it probably prejudiced his case with the Government. Also, he has appeared in the past too much opposed to organized labor as a whole. He says now he is not opposed to organized labor, and maybe he is more friendly to it than even he realizes. For this very step in making a clear-cut issue of compulsory union membership may easily be a great boon eventually to organized labor. Like every other American institution labor unions can be successful in the long run only with the willing consent and cooperation of their members. The moment the Government compels unwilling membership in labor unions, that moment unions as well as industry will cease to exercise the American system of freedom of enterprise. There are industrialists who shout for federal regulation of labor unions; and if the unions persist in their present political pressure for unfair advantages it will surely come. But it would be better for all if labor unions are left free agents; for then, maybe industry will again become relatively free.

Nathan C. Rockwood



Becomes Superintendent

DONALD E. KOCH has been appointed acting plant superintendent of the Giant Portland Cement Co., Egypt, Penn., to succeed Oliver D. Havard,



Donald E. Koch

resigned. Mr. Koch came to Giant as chief chemist in 1937 and was appointed assistant superintendent in June, 1942. He has been identified with the manufacture of cement since September, 1923, when he started as a sample boy with the old Sandusky Cement Co. In 1929 he became assistant chief chemist of the Medusa Portland Cement Co. plant at Wampum, Penn., and at the time of his appointment as chief chemist at Giant Portland Cement Co., was assistant chief chemist at the Standard Portland Cement Co. plant at Painesville, Ohio. At the age of 35, Mr. Koch is one of the youngest superintendents in the industry.

A. R. B. A. Nominees

C. W. BROWN, chief engineer, state highway department, Jefferson City, Mo., is official nominee for president of the American Road Builders' Association. The nomination is tantamount to election. Mr. Brown will take office early in 1943, succeeding

Major Chris J. Sherlock, who is now stationed at Denver with the U. S. Engineer Corps. Renominated as association vice-presidents are Paul B. Reinhold, president, Atlas Equipment Corp., Pittsburgh, Penn.; Charles W. Smith, president, Smith Engineering and Construction Co., Pensacola, Fla.; Lion Gardiner, vice-president, Jaeger Machine Co., Columbus, Ohio; and Robert A. Allen, state highway engineer, Carson City, Nev. H. C. Whitehurst, District of Columbia director of highways, Washington, D. C., was renamed treasurer.

Working Strategic Minerals

GEORGE C. HARDIN, JR., has left the Victory Fluorspar Mining Co., of Elizabethtown, Ill., and has joined a United States Geological Survey party working on fluorspar.

DAVID M. LARRABEE is now working on strategic minerals (mica, beryl, etc.) for the U. S. Geological Survey with headquarters in Hanover, N. H.

President Chemical Engineers

J. L. BENNETT, manager of chemical operations of the explosives department of Hercules Powder Co., Wilmington, Del., has been elected president of the American Institute of Chemical Engineers, succeeding Sidney Kirkpatrick, editor of *Chemical and Metallurgical Engineering*. Charles M. A. Stine, vice-president of E. I. duPont de Nemours and Co., was elected a director to serve for three years.

Celebrate 75th Birthday

L. T. SUNDERLAND, president of the Ash Grove Lime and Portland Cement Co., Kansas City, Mo., received the congratulations of employes on his 75th birthday anniversary recently in the form of a book containing the names of 681 employes. Also listed were the names of the people of a grateful community for his contribution to the economic life and general prosperity of the community because

of his foresight and business judgment in the advancement of the cement industry in Chanute and the surrounding area. The company also celebrated the receipt of the seventh trophy for completion of a year with no lost-time accidents. Mr. Sunderland has long been interested in the efficiency of his plants and the well being of his employes.

Joins Maritime Service

L. W. WALTER, formerly secretary of Committee C-1 on Cement, A.S.T.M., and consultant on concrete, is now with the U. S. Maritime Inspection Office, c/o San Jacinto Shipbuilders, Inc., Houston, Texas. Mr. Walter is maintaining his mailing address at 5 Boyd Ave., Jersey City, N. J.

Elected President

VINCENT P. AHEARN, executive secretary of the National Sand and Gravel Association, Washington, D. C., who certainly needs no introduction to our readers, was elected president of the American Trade Association Executives, at their recent annual convention in New York City. "Vince" has been executive secretary of the N. S. & G. A. for more than 20 years; and he has risen steadily in national prominence as a trade, or industrial, association executive.

Superintendent at Keystone

P. F. MAURER has been appointed superintendent of the Keystone Portland Cement Co., Bath, Penn., succeeding T. N. Haffner, deceased. Mr. Maurer comes to Keystone from the Standard Lime and Stone Co., Martinsburg, W. Va., plant where he was assistant chief engineer. He has been connected with the industry 17 years.



P. F. Maurer

ROCK PRODUCTS

Appointed Chief Chemist

S. G. MCANALLY has been appointed chief chemist of the Giant Portland Cement Co., Egypt, Penn., a position he held until 1937 when he left the country to become general superintendent of the Brazilian Portland Cement Co., Sao Paulo, Brazil.

Mining Engineer Changes

J. W. STEWART has resigned as assistant professor of mining engineering at Lafayette College to take a similar position at the University of Illinois. To fill the vacancy on the staff at Lafayette, H. F. Sagoci has been appointed instructor in mining engineering. Mr. Sagoci received his S.B. in mining engineering from M.I.T. in 1940, was awarded an S.M. degree in mathematics in 1942, and is now a candidate for the Sc.D. degree in geophysics at the same institution.

Heads Seamen's Service

HENRY J. KAISER, West Coast shipbuilder and president of the Permanente Corp., Oakland, Calif., has accepted the chairmanship of the Board of Trustees of the United Seamen's Service, which was inaugurated to provide clubhouses and recreation facilities for American seamen in principal ports of the United States and in certain foreign ports. This announcement was made by Admiral Emory S. Land, War Shipping Administrator.

Joins Roads and Streets Staff

HAROLD J. MCKEEVER, formerly in the advertising and publications bureau of the Portland Cement Association, Chicago, Ill., has joined the editorial staff of *Roads and Streets* as associate editor. Prior to his concrete work Mr. McKeever served as an editorial writer for several years with the Armco Drainage Products Association and its publication, "The Highway Magazine."

Heads W. P. B. Board

FERDINAND EBERSTADT, vice-chairman of the War Production Board, Washington, D. C., has been made chairman of the Facility Clearance Board, which will pass on all new projects, military and civilian, costing \$500,000 or more. This is one of two facility boards formed by the W.P.B. to put in force an order by Chairman Donald M. Nelson terminating all construction—civilian and



Paul B. Reinhold, left, and Gordon F. Flagg, in civilian clothes, watching tank demonstration, Captain Chester L. Reed and Major J. R. Day, to the left, and Sgt. Emanuel Hill and Lt. H. J. Black on tank

military—pending a review to determine whether the projects building or authorized are essential to the war effort. By his appointment, Mr. Eberstadt, subject to Mr. Nelson's approval, becomes the final judge of what will be built in the United States.

Riverside Appointments

JACK SAUER has been made head chemist at the Oro Grande plant of the Riverside Cement Co., Los Angeles, Calif., which was recently opened after a shutdown of several years. Don Roberts is the new mill foreman. These announcements were made by Howard Starke, general superintendent of the company.

Elected President

DONALD H. SPICER, president, World Bestos Corp., has been elected president of the Brake Lining Manufacturers' Association, Inc., of New York, N. Y.

Organizing Ordnance Crews

PAUL B. REINHOLD is using part of his great source of energy and vitality directly to help the U. S. Army. As acting president (first vice-president) of the American Road Builders' Association, together with Charles M. Upham, engineer-director of the association, they are using the facilities of the organization to help the Ordnance Department of the U. S. Army enlist men and find officers for repair units in 28 or 30 states.

Pennsylvania was the tenth state to be worked for such units. In every

case aid of the highway departments is solicited for their assistance and facilities. The first meeting was held in Harrisburg, September 22, when an examining committee selected a captain, three first lieutenants and one second lieutenant to head up the company, which totals 215 to 230 men, all experienced in the maintenance and repair of highway machinery.

With the curtailment in highway construction, Mr. Reinhold writes us that he considers it both an honor and a privilege that the Ordnance Department should come to the American Road Builders' Association for assistance in organizing these units. Mr. Reinhold is a machinery distributor in Pittsburgh and is well known in the crushed stone industry as having been an ace salesman of crushed stone and active in the National Crushed Stone Association for many years.

Joins Wabash

W. F. MURRAY, executive vice-president and director, Wolverine Portland Cement Co., Coldwater, Mich., has resigned to accept a position as vice-president in charge of production at the Dayton, Ohio, plant of the Wabash Portland Cement Co., which terminates more than 23 years of association with the Wolverine company. Mr. Murray entered the Wolverine service in 1919, shortly after his discharge from the army. He served as mechanical engineer, plant superintendent, general superintendent, and 12 years ago was named executive vice-president and granted a membership on the board of directors.

Becomes Director

R. E. ROSCOE, vice-president in charge of operations, Bessemer Limestone and Cement Co., Youngstown, Ohio, has been elected a director of the company to succeed Joseph G. Butler III, who resigned when he was commissioned a captain in the U. S. Army Air Forces.

Another Promotion

ROGER C. GLEASON, vice-president of the Wolverine Portland Cement Co., Coldwater, Mich., has been made executive vice-president to fill the vacancy caused by the resignation of W. F. Murray. J. L. Nelson, vice-president in charge of sales, was made a director.

War Mineral Study

P. J. SHENON has been recalled by the U. S. Geological Survey for the duration of the war to co-ordinate the war minerals investigations of the Survey in Montana, Idaho, Oregon, and Washington. A regional office in charge of Mr. Shenon has been established in Spokane.

A Patriot's Address

WILLIAM E. HILLIARD, vice-president, New Haven Trap Rock Co., New Haven, Conn., is a genuine New England Yankee. Apparently only a Yankee still appreciates the value of brevity in these days of long-winded orators. As a past-president of the Lions Club of New Haven, on the occasion of the Club's bond rally, September 29, he made the following speech (which might well serve as a model):

Ever since the Fourth of July, 1776, the American people have enjoyed liberty and freedom to a greater degree than the people of any other large and important nation. The Declaration of Independence established our right to life, liberty, and the pursuit of happiness. Our Constitution set up safeguards for those rights, assuring civil and religious liberty for all. In 1787 we were one of the poorest and least important nations. In 1942 we are one of the largest, strongest, and most powerful nations in the world. Right now our country and our free institutions are facing the greatest danger they have ever faced. We have been attacked by strong, well-prepared, ruthless bandit nations, who have attacked us because of what we have, and what we are. This war strikes deeply into the hearts and lives of all of us in the United States.

One great difference between nations governed by dictators and the democracies, is the fact that the dictator nations are geared for war. That is to them the normal and natural condition of affairs. During peace they train their armies and create arms and munitions with which to fight. When war begins they feel that conditions are normal once more. When peace is declared they do not know what to do with it, except to continue to train

their armies, for whom they have no place in civilian life. In the democracies peace is the normal condition of affairs. War is a ghastly horror, to be avoided at any cost, except in defense of honor and freedom. In time of peace our efforts, even though not always successful, are directed toward producing more and better food, clothing, housing, and equipment of all kinds to make life better and raise the standard of living for all. We are not prepared for sudden war; but when war starts and after a long, slow preparation we are finally ready, the dictator nations learn that they were badly mistaken about the fighting quality of the democratic nations. In her one thousand years of history, England has lost only one war and that was the American Revolution. In one hundred and sixty-six years the United States of America has never lost a war, and is not going to lose this one. But it will take the very best efforts of all our men in the armed forces and one hundred per cent coöperation from all of us on the home front to win this world-wide conflict.



W. E. Hilliard

Calvin Coolidge once said, "there is no money in the treasury of the United States. The only money is in the pockets of the people. The government must get its funds from the pockets of the people by taxation or by borrowing to pay the expenses of government." Every Bond we buy, every War Stamp we purchase makes it possible for the government to do that much more to furnish arms and supplies to our men at the front with which to gain the final victory and end the war.

Our boys—OUR BOYS—are located to-day all over the world, in Alaska, South America, Greenland, Iceland, Ireland, Scotland, England, Africa, Egypt, Arabia, Palestine, India, China, Australia, New Zealand, and the South Sea Islands. They didn't go there because they wanted to travel and see the world. Duty called them and they answered the call. They are out there fighting for their country—for you and for me. If they could have one wish today and get their hearts' desire, with one accord they would ask for an early victory and happy return to the good old U. S. A. Let's make that dream come true! Let's speed up that flow of equipment and munitions they need to overpower and overwhelm those deadly enemies wherever they are! How about it? What do you say? Let's buy Stamps and War Bonds to the very limit of our ability, to help bring those brave American boys back to the land they love. Let's bring our boys—BACK HOME!

Named Vice-President

BRUCE GREGORY has been appointed vice-president in charge of sales and a member of the board of directors of Thornton Tandem Co., Detroit, Mich., according to an announcement by A. F. Knobloch, president of the company. Mr. Gregory is well known in the automotive industry. After his graduation from the University of Michigan in 1926, he was with the sales department of the Firestone Tire and Rubber Co. for two and a half years. Following this he was with the General Tire Co. for over nine years, occupying the position of central divisional sales manager when he resigned to enter the field of motor transport. He has been associated with the Thornton Tandem Co. for about a year.

Lehigh Appointments

J. B. ZOOK, formerly chief engineer of the Great Lakes Portland Cement Corporation and the Lehigh Portland Cement Company at Buffalo, N. Y., has been appointed superintendent. He succeeds A. T. BeVier who retired on September 1. J. Allen McGraw is the assistant superintendent at Buffalo. In the November issue of ROCK PRODUCTS it was stated incorrectly that these appointments involved the Iola, Kans., plant.

In the Army

THOMAS D. SHIELS, field engineer of the Portland Cement Association at Abilene, Texas, has been made a captain in the Army Air Force, and has been assigned to Lowry Field, Denver, Colo.

E. H. BILLS, formerly in the sales department of the Columbia Quarry Co., St. Louis, Mo., handling agricultural limestone and fine ground products, was commissioned a 2nd lieutenant in the Quartermasters Department and will be stationed at Oakland, Calif. He received his commission at Camp Lee, Va.

N. A. Moberg, office manager, Yakima Cement Products Co., Yakima, Wash., has been commissioned a first lieutenant in the U. S. Army. He has had no military experience and is being commissioned directly from civilian ranks in order to handle his specialized task. He applied for enlistment in the motor transport in August and expects to be stationed at Seattle.

ROCK PRODUCTS

Universal Appointment

C. D. RUGEN, formerly assistant operating engineer, Universal Atlas Cement Co., New York, N. Y., has been appointed operating engineer, succeeding H. P. Reid who has been named assistant to the president. Mr. Rugen, a graduate of Purdue University in civil engineering, joined the engineering department of the company in 1930 and later transferred to the operating department. He has worked in most of the company's plants, and has specialized in mill operations in the fields of grinding, burning, etc. He has also done special work on production and construction cost analysis. He is the author of "New Modern Wet-Process Cement Plant" (Rock Products, March and April, 1939) and joint author of "How to Improve Grinding" (Rock Products, March, April and May, 1940).

Gives Transportation Talk

L. T. STOLBERG, traffic manager, New England Lime Co., Adams, Mass., spoke on transportation problems in New England, at the first of a series of discussion meetings to be held this fall and winter by the Berkshire County Traffic Association. The meeting was held at Pittsfield, Mass.

Joins Republic Mining

ROBERT T. CHAPMAN has left the United States Gypsum Co., Gypsum, Ohio, where he was mine superintendent, to join the staff of the Republic Mining and Manufacturing Co., Bauxite, Ark., working on mine mechanization.

Secretary-Treasurer

F. L. HURLEY has been made secretary-treasurer of the Latex Sand and Gravel Co., Longview, Texas.

Elected Director

H. T. HASLAM, whom the lime industry will remember for his research work on lime several years ago, has been elected a director of the Standard Oil Co. of New Jersey. Dr. Haslam, while a professor at Massachusetts Institute of Technology, did notable research work on lime and on combustion. Several years ago he went with Standard Oil Co. of New Jersey to introduce the hydrogenation process of recovering high octane gasoline. Subsequently he became vice-president in charge of sales, and now has been elected a director. He is evidently one of those rare indi-

viduals with a keen scientific research type of mind, plus a strong commercial instinct.

Consultant

R. J. SCHUMACHER, formerly chief engineer and general superintendent, Kelley Island Lime and Transport Co., Cleveland, Ohio, is now engaged as a special consultant with the Material Service Corp., Chicago, Ill.

From Lime to Manganese

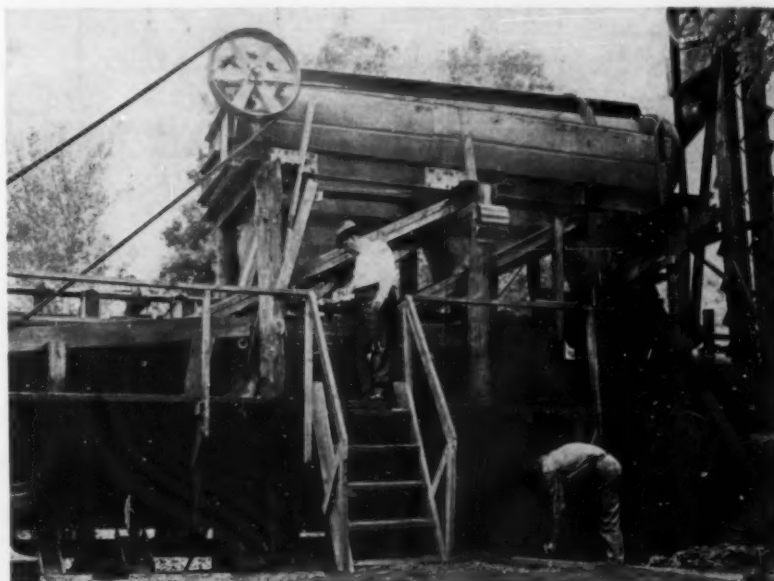
PEDRO SIMPKINS of Ada, Okla., has had a career which might well form the subject for an interesting biography. His first enterprise connected with the industry was the formation of the Ada Lime Co., which makes a chemical lime among other products. Not content with this activity, he formed the Tri-County Sand and Gravel Co., which also has extensive ready mixed concrete operations, involving 40 transit mix trucks. The ready mixed concrete was used extensively in the Pittstown oil field.

His most recent activity is the extraction of manganese from the comparatively low-grade ores near Bromide, Okla., in Coal county. Mining of the ore is largely a pick and shovel proposition at the present stage as the mineral is found in crevasses within limestone formations. Nuggets are found from the size of a marble to 6 or 8 in. in diameter, and are removed by hand-picking. Extraction of the finer manganese did not lend itself to some of



Pedro Simpkins examining some of the processed manganese

the customary equipment and Mr. Simpkins proceeded to make his own. One of the illustrations shows the simple plant which was developed out of his concrete and sand and gravel experience. An ordinary concrete mixer is used as a pug mill to remove waste materials. The mineral bearing pulp is then elevated to the top of the plant by belt bucket elevator and chuted into a rotary screen having three screening surfaces. A specially designed jig is used for the final separation. At \$48 a ton for manganese, the project should pay real dividends, especially for the duration of the War.



Courtesy The Oklahoman
Simple plant designed and built by Mr. Simpkins to extract manganese

HINTS AND HELPS

Bins at Scales for Accurate Loading

THE ACCOMPANYING ILLUSTRATION was taken at a crushed stone plant in the south, showing small bins alongside a truck-platform scale.



Samples of various stone sizes near truck scales help merchandise the products

Each bin is for a different size of stone. Excesses in a truck body can be quickly shovelled into the proper bin and a light load can be increased as well. It's easy to point out to a customer, from the office window, the various grades available to him.

Saving Wire Rope On Tag Line

By ROSS WHEELTON

WHEN THE TAGLINE CABLE ON a clamshell bucket requires replacement, it usually will be found to be worn only on one end, the portion running on the counterweight sheaves. The other end will be found



Tagline cable on clamshell bucket having an excess length coiled and wired securely at the end to provide for section worn out

in perfect condition, providing it has been protected from the weather by a suitable dressing.

Upon replacing a cable of this kind sometime ago, it was apparent that if the old cable were a little longer it could be still used. Therefore when

ordering a new one, its length was increased by exactly the length of the worn portion of the old cable. When this new tagline cable was fitted, the surplus was neatly coiled and wired to the clam bucket chains as shown in the accompanying illustration. When the portion traveling the sheaves wears to the point where its replacement is necessary, it is cut off. The cable is then reversed and the unused portion put into service, saving the cost of a number of feet of wire rope.

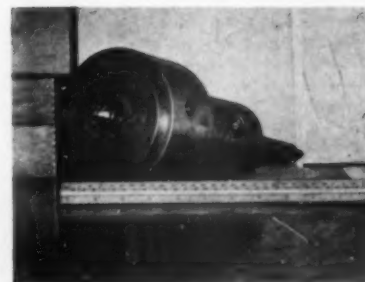
Making Liner Bolts For Ball or Rod Mills

By WALTER B. LENHART

LINER BOLTS for ball or rod mills are often difficult to obtain in these days of material shortages, and one operator found it advantageous to make his own liner bolts. The blacksmith, during spare time forges the heads from round mild steel using an improvised air hammer.

As a small ball mill will require 100 or more liner bolts threading them is the biggest job. However, for this operation, a special chuck was made to hold a 1 1/4-in. bolt die. This chuck was so designed that it could be used on a vertical drill press.

In practice the forged head is held in a suitable vise attached to the bed of the drill press with the forged head down. The chuck, with its die, is then lowered over the vertical member and the threads cut by the rotation of the chuck.



Die mounted in special chuck for threading liner bolts

A common laborer can thread enough liner bolts for an average sized ball mill in 8 hr. The device also has the advantage of always having on hand means for quickly making liner bolts in an emergency, and where purchased liner bolts must come from a distance, saving of time is often vital.

Sells Drainage Water

BLUFFTON STONE CO., Bluffton, Ohio, is selling nearly 1 1/2 million gallons of water pumped daily from its quarry to permit operation. About 1,000,000 gallons is diverted to the municipal electric-light and water-works plant, and the Page dairy plant, for industrial use.

Lines have been installed connecting the two plants with the stone quarry by which water in virtually an unlimited amount may be utilized by these consumers which require large quantities daily for cooling purposes. Water piped to the Page plant is used for cooling milk while that furnished the light plant is used in connection with the cooling of condensers for steam turbines, which furnish electric current to the municipality.

Cement Company Silos for Wheat Storage

CONSOLIDATED CEMENT CO., Mildred, Kan., is reported to have arranged to use its silos at a long unused cement plant for storage of wheat. The capacity is 328,000 bushels. The silos are on the M-K-T railway and are said to represent an original investment of \$125,000.

Paul Johnson, head of Glencliff, Inc., conceived the idea of fitting the bins up for wheat storage. Negotiations were opened with the owner, the cement company, and brought to successful conclusion. Much machinery

HINTS AND HELPS

Manganese-Steel Cement-Kiln Parts

IN THESE DAYS alloy steels are hard to get, but they are justified for tough-service parts because in the long run they require use of less critical materials than substitutes. One of these alloys is Amsco alloy, which according to E. B. Smith, chief engineer, Dewey Portland Cement Co., Davenport, Ia., has been used for several years for kiln-end feed cones, feed-pipe supports, kiln discharge ends, brick retaining rings, cooler spouts, cooler cone ends and flue and stack dampers. The material used is from F-10 having 26-28 percent chrome and 10-12 percent nickel.

"This alloy not only does a good job of resisting abrasion, but also endures changes of temperature without cracking or warping," said Mr. Smith. "I would say that resistance to cracking and warping is the more important factor. Other metals will resist the abrasive action, but they can't stand the heat changes the way Amsco alloy does. The temperature in one of our kilns will vary from 1500 to 2700 deg. F., which means that the metal gets almost this hot; but in spite of this destructive fluctuation of heat, the parts made of Amsco alloy require a minimum of maintenance and few repairs."

The Dewey company kilns at Davenport are 11 x 175 ft., and are fired with pulverized coal. Expansion and contraction of the kilns is 8 to 9 in.



Feed end cone assembly made up of 16 segments

and many tons of old iron were salvaged from the abandoned plant and the immovable concrete structures put into much needed service for wheat storage now at a premium.

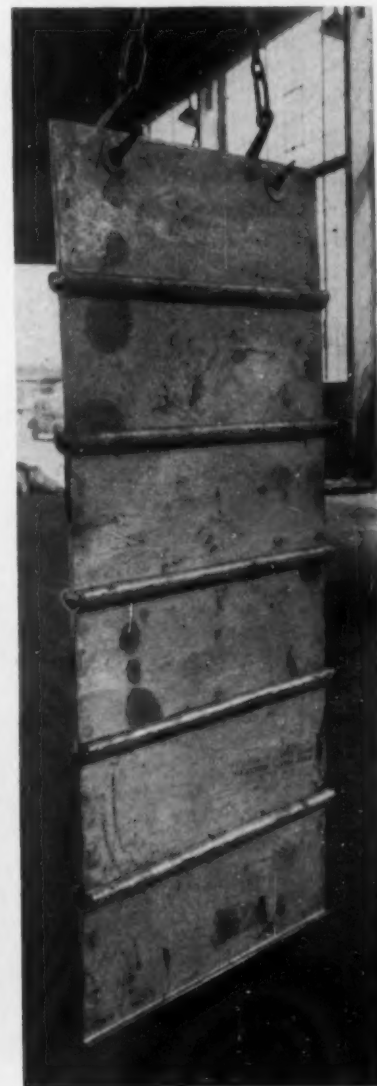
The Ryan Construction Co. of Omaha had designed the elevator leg and various conveyors necessary for the new service.



Interior of feed end cone. Feed pipe deposits material far enough inside to be caught by brick spiral



Discharge end ring of alloy steel on kilns



Damper of alloy steel for cement kiln

100 Percent Conveyor Belt Plant

Birmingham Slag Co. sizes slag at successive screening stations. Ready mix concrete plant is served as integral part of slag plant

A DEPARTURE in slag plant design for the Birmingham Slag Co., Birmingham, Ala., was adopted at Alabama City, Ala., this year when the company built a new plant to replace one of smaller capacity. Until this plant was erected, all the slag processing plants built by the company were gravity design and the slag, received in ore cars, was elevated to the top of the plant in skips. The big capacity plants in operation at Fairfield and Ensley, just outside Birmingham, and at Thomas, Ala., are gravity operations, with a combined capacity of close to 10,000 tons daily.

When the capacity was increased from about 600 tons daily to 250 tons per hour by building a new plant, the design adopted provided for belt conveyor handling throughout. An estimated 1500 ft. of belt conveyor is in use. In some respects the plant resembles the crushed stone plant at Douglas dam (see article in this issue). All conveyors have Continental Gin Co. 3-roll troughing idlers

By BROR NORDBERG

and return idlers, and were fabricated in the company's shops at Fairfield, Ala.

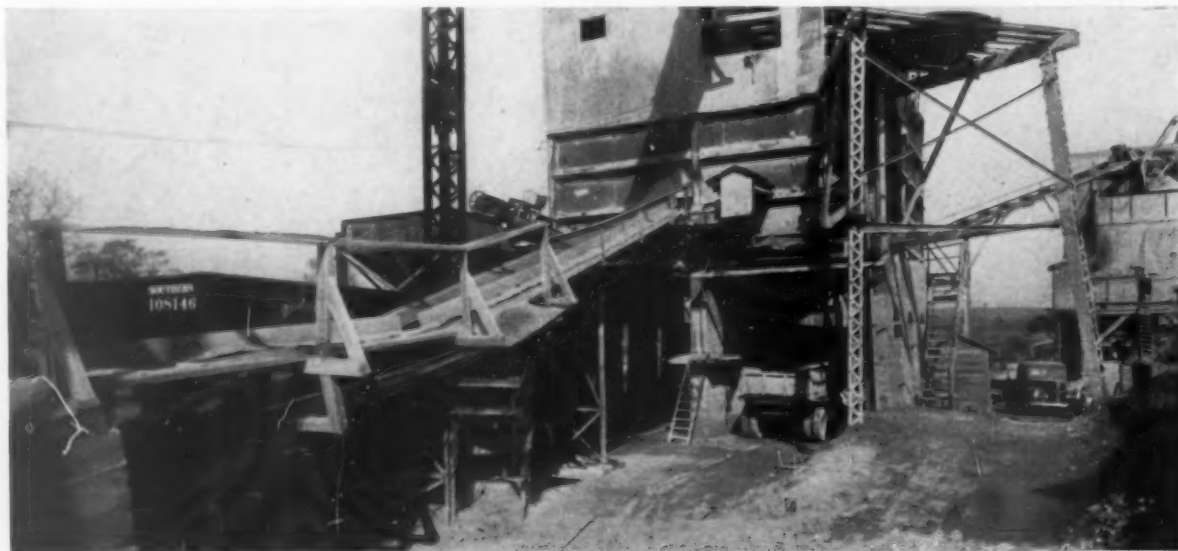
Slag is sized at successive screening stations and the various sizes are stockpiled, as produced, by stacking belt conveyors. Four coarse grades are produced and stockpiled in a row over a reclaiming conveyor tunnel. Sizes below ½ in. are placed in bins retained from the old plant.

Tunnel Conveyor Under Stockpiles

One of the principal reasons for this layout is to provide maximum storage capacity with a minimum of re-handling. Something like 12,000 to 15,000 tons of reclaimable capacity is available, in addition to storage away from the plant which is used only when the storage over the tunnel conveyor comes up to capacity.

With the old plant, bin capacity was only 200 tons which necessitated the re-handling of considerable tonnage by railroad cars to storage and more re-loading into cars from stockpiles by locomotive cranes. The ability to blend the different grades of slag as they are reclaimed is also of importance.

An increase in productive capacity was necessary for two reasons. More slag is being produced by the adjacent Republic Steel Co. plant since its blast furnace capacity was stepped up. This slag must be kept moving out of the dump pits. War construction within reach of Alabama City has been very active during the year. During more normal conditions most of the tonnage would move by rail but at the present time practically all the slag is moved as ready-mixed concrete. In this connection it is of interest that the slag plant is tied in directly, by belt conveyor, to the existing central mixing concrete plant. Any size of slag, or blend, can



Tunnel conveyor, left, either transfers to truck bin conveyor to the left, to belt conveyor through the plant structure for loading cars or transfers to the ready mixed concrete plant to the right. Note cable controls for tunnel bin gates



Above: Overall view of new slag plant. Slag is conveyed by tunnel conveyor to transfer to inclined conveyor, starting from left and inclining upward to first screening station. Long horizontal conveyor brings oversize back to re-crusher on extreme left; above it is one of the stacking belt conveyors over tunnel conveyor. Center: Close-up showing tunnel conveyor inclining upward for transfer through old plant structure where fine slag is sized or for transfer to left to truck bin. Below: Looking up to plant from primary belt conveyor



Primary slag crushing unit. Feed from slag pits comes in on the right. Pan conveyor takes material to screen and oversize goes to cone crusher below, left. Tunnel underneath carries slag below tracks to plant on the other side

be moved from stockpiles, or from the slag bins, directly into the concrete plant bins.

One of the temporary difficulties in operating the slag plant is that the two slag dumps alongside the blast furnaces are small and, with the blast furnaces running at full speed, the slag must be removed from the pits without the ordinary period of time for cooling it off. While one pit is being filled with molten slag, the slag in the other is water-sprayed and then excavated for delivery to the new slag plant, usually the day after it was poured into the pit. After initial crushing it sometimes becomes necessary to water-spray the slag on the primary belt conveyor that delivers to the screening plant.

A No. 37 electric Marion shovel with a $1\frac{3}{4}$ -cu. yd. dipper operates in one pit and one that is steam-powered in the other pit. Both are crawler-mounted machines. At present, three dump trucks are serving each shovel. They are Ford and International trucks, carrying five tons to the load. Consideration is being given to crawler-mounted wagons for this work, which is a very short haul.

Crushing-Scalping Unit

A crushing-scalping unit was built close to the slag pits, with a tunnel belt conveyor delivering the slag underneath main railroad lines on the property to the main slag plant. Slag is dumped over a grizzly with 10-in. spacings into a hopper and a 48-in. Jeffrey reciprocating feeder transfers it onto a 36-in. Jeffrey pan conveyor which feeds a 4 x 8-ft. single-deck Symons horizontal screen. Plus $1\frac{1}{4}$ -

in. material from the screen is the size slag generally fed to a $5\frac{1}{2}$ -ft. Symons cone crusher below. Minus $1\frac{1}{4}$ -in. joins the crusher discharge on a 30-in. tunnel belt conveyor for delivery, a horizontal distance of 280 ft., to the main slag plant. It is on this belt, which is ordinary conveyor belting, where water is sometimes played on the slag to cool it. The belt travels at the rate of 360 f.p.m. Two men pick out iron lumps as the slag passes over the scalping screen and one picker is stationed at the pan conveyor. The operator at the scalping station has push-button electric switches to start and stop the equipment.

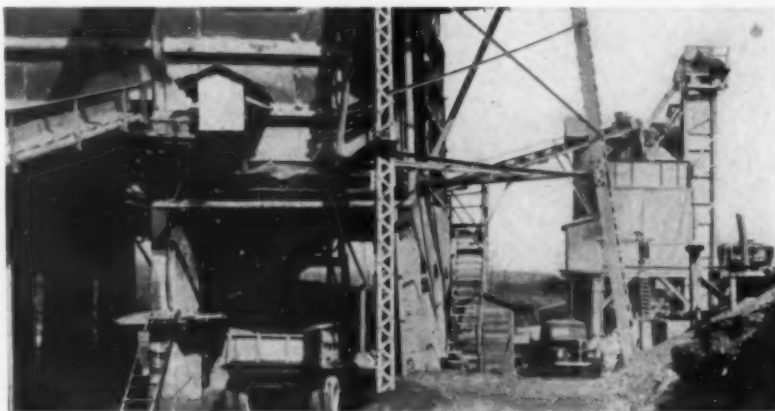
Four coarse slag sizes are generally produced in this plant for direct stockpiling. Stockpiled in consecutive piles as they are produced are $2\frac{1}{2}$ - to $1\frac{1}{2}$ -in. (No. 23); $1\frac{1}{2}$ - to $1\frac{1}{4}$ -in. ballast (No. 3); $1\frac{1}{4}$ - to $\frac{3}{4}$ -in. (4A); and $\frac{3}{4}$ - to $\frac{1}{2}$ -in. (No. 4). Fine

products are $\frac{1}{2}$ - to $\frac{1}{4}$ -in. (No. 5) and $\frac{1}{4}$ -in. minus (No. 7) stored in bins. Sometimes No. 5A roofing material is produced by making a separation at $7/16$ -in. instead of on the $\frac{1}{2}$ -in.

The tunnel conveyor transfers to an inclined 30-in. belt conveyor, 158-ft. centers, delivering to the first vibrating screen which is a 5 x 10-ft. double-deck Allis-Chalmers Ripl-flo. This screen is just in front of a 4 x 10-ft. Ripl-flo screen, also two-deck, to receive some carry-over and produce a second size at the screening station. Screen openings are $1\frac{1}{2}$ -in. and $1\frac{1}{4}$ -in. square openings, top and bottom decks on the first screen and $2\frac{1}{2}$ -in. and $1\frac{1}{2}$ -in. on the second screen. With this combination, ballast ($1\frac{1}{4}$ - to $1\frac{1}{2}$ -in.) is taken off to a 24-in. inclined stockpiling belt conveyor on 62-ft. centers. A $1\frac{1}{2}$ - to $2\frac{1}{2}$ -in. product is stockpiled by a 24-in. belt conveyor on 124-ft. centers. Plus $2\frac{1}{2}$ -in. slag is sent to a re-crusher, a 6-in. McCully gyratory, located at the foot of the 30-in. inclined primary conveyor. A chute drops this slag from the screen to an 18-in. horizontal belt conveyor, 183-ft. centers, that delivers to the crusher which in turn discharges onto the inclined primary belt to complete a circuit. A 36-in. diameter Cutler-Hammer magnetic head pulley on this conveyor rejects iron just ahead of the sizing screens.

Minus $1\frac{1}{4}$ -in. slag is carried forward over a 24-in. belt conveyor, 76-ft. centers, to the next screening station. Here, a 4 x 14-ft. Allis-Chalmers two-deck low-head vibrating screen, with $\frac{3}{4}$ - and $\frac{1}{2}$ -in. openings, screens out the $\frac{3}{4}$ - to $1\frac{1}{2}$ -in. slag and the $\frac{1}{2}$ - to $\frac{3}{4}$ -in. Twenty-

(Continued on page 51)



Ready mixed concrete plant on right gets feed by belt in continuous stream from slag stockpiles and bins—making it an integral part of slag plant

SAND AND GRAVEL

Two T.V.A. Dams Served From One Plant

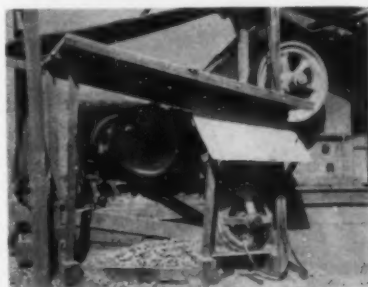
Birmingham Slag Co. constructs temporary plant at Calhoun, Tenn., which is operated by Diesel power to conserve electrical energy

ABOUT 1,000,000 tons of sand and gravel will have been produced near Calhoun, Tenn., by the Birmingham Slag Co., Birmingham, Ala., for the construction of Ocoee No. 3 dam and the Apalachia dam of the Tennessee Valley Authority on a contract now near completion. Both dams are being served from a single producing plant built for the purpose at a site chosen because of its rail connections. It is alongside the Hiwassee river, 20 miles distant from river deposits being excavated in Chickamauga lake, an artificial body of water accumulated upstream from Chickamauga dam.

Sand and gravel are towed to the plant for processing, in barges, and the finished products are shipped by rail to Ducktown, for Ocoee No. 3 dam, and to Fanner, near to Apalachia dam.

Combined, the two projects called for a guarantee of 5,500 tons daily maximum capacity ready for delivery, and a plant was designed by engineers

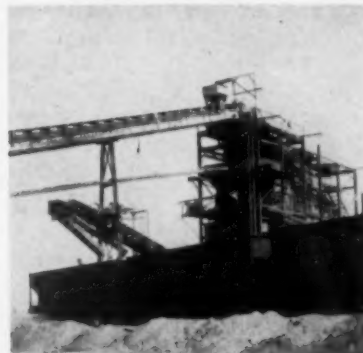
of the Birmingham Slag Co. to produce 400 tons per hour. It is a 100 per cent Diesel-powered plant. Diesel power was decided upon in order to help conserve critical electric power



Two jaw crushers, one over the other, to crush oversize

for Southern war industries. Three grades of gravel and one of sand are being produced.

Coarse gravel as specified had to have 95 to 100 percent passing a 5-in. square mesh and 0 to 15 percent

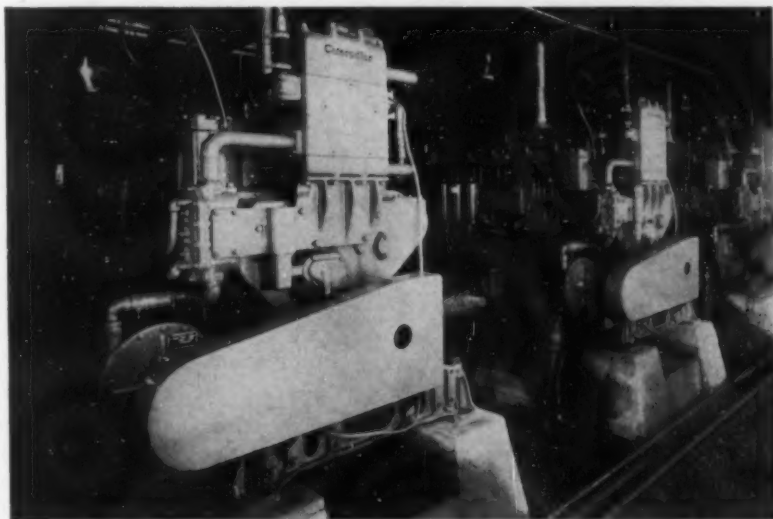


Sand and gravel plant at Calhoun, Tenn. Note gravel loading belt conveyor over car with hinged chute

through 1½-in. openings. Medium sized gravel was to have 90 to 100 percent minus 1½-in. and 0 to 10 percent through ¾-in. The ¾-in. gravel specification called for 90 to 100 percent minus ¾-in., 20 to 50 percent minus ¾-in., 0 to 10 percent through a No. 4 sieve and 0 to 5 percent through the No. 8. Concrete sand is produced to a grading specification of 95 to 100 percent through 4-mesh, 75 to 90 percent through 8-mesh, 50 to 85 percent minus the No. 16, 5 to 30 per cent minus No. 50 and must contain 0.5 to 5 percent minus 100-mesh. In tonnage, the proportions of each aggregate being produced on the contract are 25 to 40 per cent sand, 10 to 25 percent 5-in. gravel, 20 to 40 percent 1½-in. gravel and 20 to 40 percent ¾-in. gravel. A fineness modulus between 2.2 and 3.2 is specified for the sand.

Construction of the plant began in January, 1942, and it was in full swing two months later. The dredge, operating in Chickamauga lake, has a 16-in. American Manganese heavy duty dredge pump driven by Diesel-electric power. The dredge is digging to depths of 45 ft., and is equipped with a rotary cutter ladder. Barges filled with 300 tons of material each are pushed upstream to the processing plant which is alongside the river.

A 3½-cu. yd. Lima clamshell, driven by a Waukesha-Hesselman semi-Diesel engine, and a 2-cu. yd. 50-B Bucyrus-Erie, driven by a Cummins Diesel engine, unload the barges. When the plant went into production, both machines were unloading into a small hopper, covered with grate bars to reject big gravel, that had a 48 x 60-in. Jeffrey-Traylor vibrating



Three Diesel-generator sets which provide sufficient power for all of plant's requirements



Sand and gravel plant which is producing aggregates for the Apalachia and Ocoee No. 3, T.V.A. dams. Barges of gravel are towed down Hiwassee river to plant for processing and then loaded into railroad cars

feeder to regulate the flow of material onto a 36-in. Barber-Greene inclined belt conveyor. This conveyor had its head pulley elevated about 15 ft., and transferred by a chute onto a second belt conveyor for plant delivery. The split between conveyors was provided in the plant design to allow for future installation of a 4 x 8-ft. single-deck Niagara scalping vibrating screen and a 20x 36-in. Cedar Rapids jaw crusher. For the first few months of operation, there was no demand for coarse gravel. An excess of large gravel needed in filling the contract later on, necessitated provision for crushing plus 1½-in. gravel for delivery with the uncrushed to the screening plant. Later, the screen was installed and two Cedar Rapids crushers were put in. One is a 20 x 36-in. jaw, the other a 10 x 24-in. jaw crusher. The arrangement was made so that 2- to 5-in. material could be put through the crushers in sequence, or all could be by-passed to the screening plant in producing the coarsest material or part could be crushed. Another change contemplated in the original design was the erection of a second hopper at the dock and the installation of a belt conveyor leading from it to the first hopper, from which the screening plant draws its feed. This addition was made later on, to shorten the arc through which one of the unloading clamshells had to turn and speed up its operation.

Screening Plant

The screening plant is of steel construction, with two 4 x 12-ft. Ty-Rock vibrating screens followed by two 4- x 12-ft. Allis-Chalmers low-head screens. To meet the grading specifications as outlined, the top two screens, shortly after production began, carried 1- and 3/16-in. wire screen cloth, top and bottom. The fines were taken direct from these

first screens into two 10-ft. diameter sand tanks, in order to conserve head room. The top decks were put in purely to lessen the wear on the finer wire. Everything over the 3/16-in. screen decks flowed over the other pair of screens which carried 1¼-in. followed by 1½-in. openings on their top decks, and ¾-in. openings on the bottom decks. Later, when the production of coarse gravel began, routine screen changes had to be made and along with the feed of big material crushers were needed to help produce intermediate sizes.

Sand is dewatered in the sand tanks and discharges directly into open storage for drainage. Gravel sizes drop into bins that together hold 300 tons in live storage. Two 5-in. water pumps deliver 2,000 g.p.m. to the washing plant. A bulldozer was used at first to handle the sand in storage and to push it into a hopper which fed out sand onto an inclined belt conveyor loading into railroad cars direct. Later a scraper bucket was installed to help load into the hopper from which cars are loaded.

Under the gravel bins are two 30-in.



Above: General view of plant. When picture was taken space had been provided between conveyors for later installation of a jaw crusher and screen. Since that time two jaw crushers and a scalping screen have been installed between the conveyors, as illustrated on preceding page. Below: Unloading barges with two clamshells

belt conveyors that incline upwards to load into railroad cars. The two together will load gravel at the rate of 1,000 tons per hour. Belt conveyors, with the exception of the primary conveyors, all have Continental Gin Co. idlers and were fabricated in the

company's shops. Production was maintained on two 8-hr. shifts. Power for all the plant operations is developed by three balanced D-13000 Caterpillar Diesel-generator sets that develop 300 kw. C. E. Blackstone is superintendent of the plant.

Slag Used for Ready Mix

(Continued from page 48)

four inch belt conveyors, on 40-ft. centers and 24-ft. centers, respectively, stockpile the two sizes.

Minus $\frac{1}{2}$ -in. slag is carried forward over an inclined 24-in. conveyor, 124-ft. centers, for further separation and storage in the old plant structure which was retained. A 4 x 10-ft. Symons screen, with $\frac{1}{4}$ -in. screen openings, divides its feed into $\frac{1}{4}$ - to $\frac{1}{2}$ -in. and minus $\frac{1}{4}$ -in. products. Both these sizes are stored in bins.

The layout provides for loading any size of slag, or blend, into cars, or trucks or into the ready-mixed concrete plant by belt conveyors. Underneath the stockpiles is a 24-in. horizontal belt conveyor on 351-ft. centers which inclines upward at the tunnel mouth up to the level of the bin gates in the old plant where fine products are stored. At that level there is a horizontal 24-in. belt conveyor, 34-ft. centers, onto which the slag in bins can be drawn for loading into cars or transference to the concrete plant. Where the two conveyors meet, slag from stockpiles can go either of two ways. It can transfer onto a 24-in. inclined conveyor, 16-ft. centers, that fills a truck-loading bin alongside or continue on the 34-ft. conveyor for delivery into cars or to the concrete plant. There are three draw-off gates under each slag pile over the tunnel conveyor which are opened and closed by a system of cables outside the tunnel.

When slag is to be loaded into railroad cars, for shipment, or for removal to another storage area, it transfers from the 34-ft. horizontal conveyor to another inclined conveyor on 22-ft. centers which puts the slag over a 6 x 10-ft. Niagara washing screen. From the screen, it drops into cars.

Because of the necessity for screening material that is sometimes damp, with a tendency for small particles of slag to stick to larger ones, it is desirable to vary the screen openings on the washing screen. Screen wire with $\frac{3}{4}$ -in. square openings is car-

ried permanently on the screen and used for washing large sized slag. The reason is that fairly large material might adhere to the coarser grades of slag. For washing smaller slag, screen cloth with slightly smaller openings than the slag will be superimposed over the $\frac{3}{4}$ -in. cloth.

Washing is unnecessary when slag, generally minus $1\frac{1}{4}$ -in., is to be transferred into the concrete plant bins. Adjustments are made there in proportioning the mixes. A drop gate arrangement at the washing screen permits by-passing it to a belt conveyor, 77-ft. centers, which fills the concrete plant bins.

L. O. Pollock is superintendent of the operations at Alabama City. W. G. South is assistant superintendent in charge of the pit operation, and W. C. Ireland is assistant superintendent, in charge of the slag plant.

Ready Mixed Concrete

Birmingham Slag Co. is one of the largest ready-mixed concrete producers in the country and, in addition to permanent plants, has been operating a number of temporary batching plants throughout the South to serve war construction projects. One of its permanent plants is the one at Alabama City, and most of the slag production at the present time is sold as ready-mixed concrete made in this plant.

The batching plant is Blaw-Knox, with a bin capacity for 150 tons of aggregates. Fine aggregate is natural sand. Bulk cement is stored in two cylindrical bins of 1000 bbl. total capacity, with inclined enclosed screw conveyors to transfer cement to the weigh batcher. Concrete is mixed in a 2-cu. yd. mixer and transit mixers are operated as agitators out of this plant.

To supplement production of ready-mixed concrete at Alabama City, a transit mix batching plant has been erected in the main storage area for slag. This is a Blaw-Knox plant with a storage capacity of 110 tons in three compartments. One is set aside for bulk cement. Aggregates are

placed in the bin by belt conveyor.

An average of 25 truck mixers is now operating in this territory and the daily capacity is about 400 cu. yd. of central mix and 800 cu. yd. of transit mix. The Birmingham Slag Co. has in operation 115 truck mixers that see service where needed, either at the permanent plants or on temporary projects. Permanent locations, in addition to Alabama City are at Fairfield, just outside Birmingham, and at Montgomery. The fleet consists of mixers with capacities from 2- to 7-cu. yd. All makes, including Jaeger, Rex, Blaw-Knox and Smith mixers are represented. The trucks are Fords, Macks and Whites.

War Construction Expansion Program

PREDICTIONS that construction would fall off rather rapidly in 1943 may have to be qualified if war and navy department announcements of expansion programs at various existing airports and cantonments are carried out. One weekly bulletin from the War Department announced \$14,000,000 of this type of construction. There is also considerable entirely new construction which has been authorized. Included in the camp and airfield extension program is a camp project in Arkansas to cost in excess of \$5,000,000, an airfield in Texas to cost over \$1,000,000, an addition to a hospital in Kentucky costing over \$1,000,000, and a new air force installation in Florida to cost over \$3,000,000. An engineering training center in Oregon will cost in excess of \$4,000,000.

N. C. Mica Mining Boom

IN NORTH CAROLINA more than 175 new mines have been opened in the last three months. Prices range all the way from 22 cents to \$16 per lb., depending on the quality of the sheets. While most of these mining operations are comparatively small, there are also some fairly large properties. One of the largest producers of mica in the country is the Keystone Mica Co., Stoneville, N. C. The company has taken out the largest sheet mica to be mined in the United States this year, some of it cutting clear sheets 14- x 16-in., and selling for as much as \$20 per lb. The sheet mica came from Price township, Rockingham County. Keystone Mica Co. is headed by C. P. Robertson as president; Ed Martin, general superintendent; and Eugene Burton, in charge of the sheeting plant.

RETAINING FINES IN CONCRETE SAND



Large number of loaded cars and trackage facilities gives some idea of activity

SAND AND GRAVEL PRODUCTION from deposits in the Montgomery, Ala., area has reached record-breaking tonnages during 1942. Shipments from this section are regularly made over considerable of the Southeast since there are few other deposits in that part of the country that contain high quality material in quantity. War construction continues very active, with the result that Montgomery sand and gravel are being shipped into several states by rail.

Capacity in the area was increased during the year when the Montgomery Gravel Co., subsidiary of the Birmingham Slag Co., built a new plant of 400 t.p.h. capacity. The plant was located in North Montgomery at the site of a former ballast pit and has rail connections to six railroad lines in Montgomery. All shipments are by rail as are those from the

Montgomery Gravel Co., subsidiary of Birmingham Slag Co., adapts hydraulic dredge pump for the disposal of a large volume of excess sand

other plants operated by the company in the district. A dragline operation was decided upon. On the other side of the city, the company's large plant has hydraulic excavation because water is plentiful.

Deposit

All the sand and gravel in the vicinity is consistently high grade, running about 98 percent silica, and there is no clay or other objectionable impurities to speak of. Any stripping needed would consist of the removal of about 6 in. of topsoil which uncovers a layer of sand about 10 ft. thick. No stripping was needed on the new property since it had been excavated before. When the demand is heavy for gravel, the layer of sand would be cast aside, or at least part of it, to uncover gravel. At times, when there is a run on sand this "overburden" is excavated and processed.

The sand increases in size progressively from the top down and is followed by a 30 ft. bed of gravel with which sand is interspersed. The percentage of gravel in this bed runs as high as 60 percent in some places but usually is 40 percent or less. Normal production demands involve considerable wastage of sand. Less than 5 percent of the gravel is bigger than 2-in. size. It can be readily seen that the pit must be operated selec-

tively according to needs and that the dragline operator must shift his machine accordingly.

Much 40-mesh sand is contained in the upper sand bed and it is characteristic of the material that great volumes of water are needed in classifying it. The problem in sand classification is to recover enough of the extreme fines, although there are plentiful fines available in the deposit to meet any specification. Using ordinary settling tanks, it is difficult to catch much 50-mesh material and just a trace of 100-mesh sand can be recovered in that way. What can be accomplished with these sands by a properly designed plant is pointed out in an article (Rock Products, August, 1938, pp. 30-33) discussing the sand classification system developed at the company's dredging plant to meet federal specifications. Similar equipment is used in this plant.

All the excavating is done by a 1201 Lima dragline, with an 85-ft. boom and a 3½-cu. yd. Hendrix bucket, which loads directly into trucks. The dragline is crawler tread mounted and is powered by a 240-hp. Cummins Diesel engine. This machine, with five dump trucks that haul 8-cu. yd., keeps the plant up to full capacity. Trucks are Dodge 10-wheel chassis with Thorntontandem drives. Six comprise the



Left: Looking down into bowl classifier for fine sand recovery. Launderers by-pass excess sand into waste sump box. Overflow around periphery also goes to sump box. Right: Bowl classifier from below, showing location of launderers

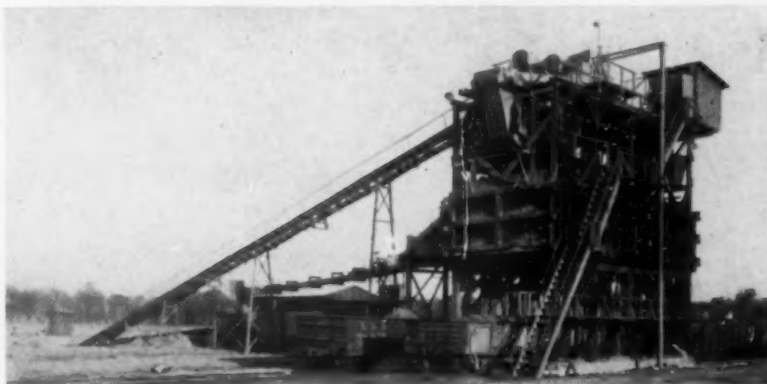
SAND AND GRAVEL

fleet but allowance is made to have one pulled out of the line for repair and service in the plant shop. This is part of a routine plan of maintenance. A movable shallow field hopper will be set up at the dragline for truck-loading, to eliminate shock to the trucks in loading and to provide a small reserve to keep trucks moving steadily.

Trucks dump over a grizzly with 3-in. spacings, set over the top of a hopper from which the matrix feeds out to a belt conveyor delivering to the plant. An excavation was made deep enough to accommodate a 75-ton Johnson batching bin, with the legs cut off, which serves as a dumping hopper with enough capacity to keep the plant uniformly loaded.

The belt conveyor is a new, completely contained assembly manufactured by Link-Belt Co. It operates on 240-ft. centers, with anti-friction troughing idlers, and every tenth one an automatic self-aligning idler. The belt is 30-in. Thermoid, 6-ply and the drive is a 50-hp. motor with speed reducer. Belt speed is 350 f.p.m. An adjustable gate opening at the throat of the hopper is the means of regulating the belt loading. The material handled has no tendency to hang up in the hopper, under any conditions, and its free-flowing characteristics simplify the job of keeping a steady load on the plant.

The screening plant is a dual one, and the load is split equally to each side at the point of discharge from the conveyor. At that point water is added at the rate of 2700 g.p.m. and half the feed is divided to the left and the other to the right onto spread tables. These tables serve as scrubbers and to spread the material



View of new sand and gravel plant, Montgomery Gravel Co., which is fed by belt conveyor from truck hopper. All shipments are by rail

to a uniform width of stream equal to the width of the screens which follow. All the feed could be sent to one side or the other, in case it is needed.

At the ends of the spread tables, over which material flows to both sides from the center, much of the sand and water are removed through steeply-inclined gravity screens (2) and laundered to the sand classifier. The runover is then sized over a triple-deck 5- x 10-ft. Tyler Ty-Rock, one under each gravity screen. Much of the time both screens produce the same sizes of gravel, usually three, but by changes in screen cloth more sizes can be produced. Fines and water through the screens are also laundered to the sand classifier.

Steel being unavailable, the bins are of timber construction, with a capacity of 1½ cars in each of five divisions. Cars are loaded directly from the bins for shipment or for stockpiling, with steam locomotives to haul them to the stockpiles. A 25-ton



Water is added at the head of the plant feeding conveyor through vertical pipes pointing down with spread tables at each side to carry the material to screens

(Continued on page 78)



Left: Looking down into sump box with pump house to the right. Note flume below main belt conveyor which carries sand and water into sump box, and to the right, emergency overflow pipes. Right: Ten-inch pump for sand disposal from sump box.



CRUSHED STONE

Million Tons for Douglas Dam

Birmingham Slag Co. builds plant to produce four sizes of coarse aggregates and 300,000 tons of stone sand for newest T.V.A. dam

DURING the past few years, Birmingham Slag Co., Birmingham, Ala., has produced aggregates for the construction of several important concrete multi-purposes dams built by the Tennessee Valley Authority. Among those now completed which were furnished aggregates by the company are Watts Bar, Cherokee and Chatuge dams. Nearing completion now are Douglas and Ocoee No. 3 dams, in the State of Tennessee, and Apalachia, in North Carolina.

Each dam is a substantial project that required the construction of sand and gravel or crushed stone plants at or near the damsite, the kind of aggregates depending upon the type of available deposits or rock ledges. Together, concrete for the dams, for which the Birmingham Slag Co. contracted to produce aggregates, sum up to a little over 2,000,000 cu. yd., representing several million tons of aggregates. Sand and gravel aggregates were produced for Watts Bar dam.

Crushed dolomite and manufac-

tured stone sand were produced for the Cherokee dam in plants that were described in *Rock Products*, December, 1941, pp. 43-48. As this is written a single sand and gravel plant near Calhoun, Tenn., is now finishing the production of aggregates for Ocoee No. 3 and Apalachia dams, and crushed stone and manufactured stone sand aggregates are being produced for Douglas dam.

The sand and gravel plant is described elsewhere in this issue; this article is concerned with the Douglas dam aggregates plant which to date is in many respects the most interesting built for these big contracts. The contract arrangements had much to do with the design of the plant.

Douglas dam is located on the French Broad river. When finished, about 498,000 cu. yd. of concrete will have been poured for the dam proper. About 1,000,000 tons of coarse and fine aggregates were contracted for and will have been produced between May, 1942, when quarry operations began, and the end of this year.

Of the 1,000,000 tons, about 300,000 tons is manufactured stone sand and the remainder comprises four sizes. These are 3- to 6-in. (cobble); 1½- to 3-in. (coarse); ¾- to 1½-in. (medium); and 4-mesh to ¾-in. (fine). Respectively, the quantities are 190,000 tons, 190,000 tons, 160,000 tons and 160,000 tons.

Design Features

The contract called for f.o.b. delivery at gates under the slag company's stockpiles, feeding a single 36-in. T.V.A. belt conveyor which transports the aggregates a distance of about one-half mile into the batching plant at the damsite. For that reason the Birmingham Slag Co. engineers designed a plant employing an extensive open storage system, whereby all sizes of material (five) are placed in open stockpiles by stacking belt conveyors. The piles are in a single row over the T.V.A. tunnel conveyor. Material is delivered to the plant at one end and the various sizes are produced in se-



Close-up of stacker conveyor, No. 1. Dirty stone scalped out at this screening station is conveyed into bin, in the center, and loaded into trucks to make roads around project



View of the entire Douglas dam plant with the exception of primary crusher which is located to the far left. Four stacking conveyors, 110-ft. centers, over stockpiles which are left to right: cobbles, 3-in. stone, 1½-in. stone, ¾-in. stone, and manufactured sand. Tunnel belt conveyor under stockpiles takes material to T.V.A. concrete plant

quence, from top size down to the sand, each finished product being graded at its point of transference to the stacking conveyor for that pile. There are five crushing and screening stations, one at each stacking conveyor location, and the use of conveyor stackers makes it unnecessary to provide more than the minimum head-room required for screening and crushing at each stockpiling station. All intra-plant transportation is done by belt conveyors.

There are eight crushing machines in the plant and ten vibrating screens, all of which contributes to the production of stone of very desirable "cubed" properties, particularly in the intermediate and finer grades of stone where several stages of reduction take place in their production. Capacity of the plant is 5000 tons of unwashed, graded product in a 9-hr. day.

All the preliminary work having to do with the location of suitable stone and the exploration work, including core drills and tonnage estimates were made by the Tennessee Valley Authority. The Authority decided where the stone should be obtained and at the other end of the aggregates production line, how the finished stone should be made available for T.V.A. use.

Quarries

Stone being excavated is known as the Knox dolomite, which occurs as a bluff rising above the river valley and paralleling it. Two quarries were opened up into the hill as a guarantee that plenty of stone will be available for the crushers. A single truck

road connects both quarries to the crushing plant.

Some stripping was needed in opening the quarries, and that was accomplished by a ¾-cu. yd. Northwest Diesel shovel. Much of the quarry equipment is the same used on the Cherokee dam project, including two Bucyrus-Erie well drills that sink 9-in. diameter blast holes. The company has standardized on large drill holes on these big contracts, drilling the full height of face and bringing down tonnages in the neighborhood of 100,000 to the blast. No. 1 quarry, which is about one-quarter mile hauling distance from the plant, has a 190-ft. face. A typical shot would consist of 15 holes drilled 6 ft. below the quarry floor to eliminate "toes," with a spac-

ing of 30 ft. and a burden of 22 ft. Holes are loaded with 7- and 8-in. duPont Nitramon and are fired simultaneously with Primacord. Secondary drilling is accomplished with jackhammers.

Quarry No. 2, a little farther from the plant, was opened because a dip in the ledge in quarry No. 1 indicated a possibility that enough stone might not always be readily available. This quarry has a 70-ft. face and is being excavated in the same pattern.

Excavating is done by two 3-cu. yd. shovels, one of which has 3½-cu. yd. bucket. They are Lima crawler-mounted electric machines. Haulage equipment consists of 15 Koehring Diesel Dumpsters and end-dump Autocars, of 6- and 4-cu. yd. capacities,



One of the stacking conveyors with cone crusher to the left



General view of No. 1 quarry. The face height of this quarry is about 200 ft.



Pulverator which is used to make sand

respectively, that saw service on the Cherokee dam project completed in 1941.

Quarry run rock is dumped directly into a 42-in. Allis-Chalmers gyratory crusher that discharges onto an inclined 42-in. belt conveyor, 165-ft. centers, which fills a surge storage pile of about 7,000 tons capacity directly over a reclaiming tunnel conveyor. This pile is the reserve against break-down in the quarry, and is a source of clean stone when wet weather conditions make quarry operation difficult. It contains stone up to 8- or 10-in. size (crusher setting is 6-in.) The primary crusher and the belting were both in service at Cherokee dam last year. The belting is the Goodrich cord design which was developed to withstand heavy shock. This conveyor and all others in the plant, with the exception of the stackers, have Continental Gin Co. troughing and return idlers and are fabricated and assembled in the shops of the Birmingham Slag Co. All the

stacking belt conveyors (five) are Barber-Greene standardized conveyors, 110-ft. centers, that were fabricated for this plant. All vibrating screens are new Allis-Chalmers Ripl-flo screens with one exception and that is a standard screen manufactured by the same company.

Rate of feed of stone to the main plant is controlled by a 4-ft. Jeffrey-Traylor vibrating feeder serving the 42-in. primary belt conveyor operating in the tunnel underneath the surge stockpile. This conveyor and all the rest for intra-plant flow are about 165-ft. centers. It delivers the stone to the first screening-crushing station which is adjacent to the stacking conveyor for cobbles. Two screens are located here, a 2-deck 6 x 12-ft. standard Allis-Chalmers vibrating screen, directly over the first Ripl-flo.

Plus 6-in. stone coming over the top of the first screen is routed through a chute into a 5½-ft. Symons crusher below, which is set for a reduction to 3-in. Between the two decks the first size (3- to 6-in.) is taken off direct to the cobble stacking conveyor which has a 30-in. belt. All the stackers following are 24-in.

Minus 3-in. stone through the top screen flows over the second screen which is used as a single-deck screen. This screen serves to scalp out clay and dirty stone, and the separation size is varied according to weather conditions. A ½-in. opening screen cloth would serve in dry weather and openings up to 2-in. might be needed when the quarry is wet.

Everything passing through this screen is routed to a 24-in. inclined belt conveyor filling a batching-type



A corner of No. 1 quarry. Shovel loading into Dumptor truck

CRUSHED STONE

bin. Trucks haul this stone to waste or for use in building roads around the project. With its clay content, it makes excellent low-grade roads. Stone retained on the screen (all minus 3-in.) is joined by the crusher discharge onto a 36-in. belt to screening station No. 2 adjacent to the stacker for 1½- to 3-in. stone. Usually, a fraction of the 3- to 6-in. stone sized at the No. 1 screen is put through the cone crusher along with plus 6-in. in order to keep up the necessary production of finer sizes further along. In this type of plant, it is a simple matter to keep the correct proportions of the sizes required for the contract (in tonnage) by controlling the amount of crusher feed at any station. A simple change of a chute will do the trick. There is no provision for adjustments in the tonnages of each size once they are in stockpiles so an inventory must be made in order to adjust production to the needs. T.V.A. engineers make cross-section surveys and calculations of the various sizes of stone in stock at regular intervals and those determinations govern how the plant must be run. Otherwise too much tonnage of a given size might be produced.

At screening station No. 2, the load is split over two double-deck 4 x 12-ft. screens set side by side. Plus 3-in. stone carried over the top deck is put through a 4-ft. 4-in. Symons cone crusher. Stone retained on the lower deck (1½- to 3-in) is stockpiled and the throughs join the crusher product on a 30-in. belt conveyor to the next screening station. The same adjustments that can be made at the first station can also be accomplished here and at succeeding stations, to alter the tonnage production of any size.

At the third station there are two 4 x 12-ft. double-deck screens, similarly arranged, with a 4-ft. Symons short-head cone crusher and a small impact crusher below. From the minus 1½-in. feed over the screens, the ¾- to 1½-in. size is screened out and stocked in its pile. Plus 1½-in. is put through the cone crusher, or part is routed through the impact crusher and this product joins the minus ¾-in. screen throughs on a 30-in. belt conveyor.

Stone Sand

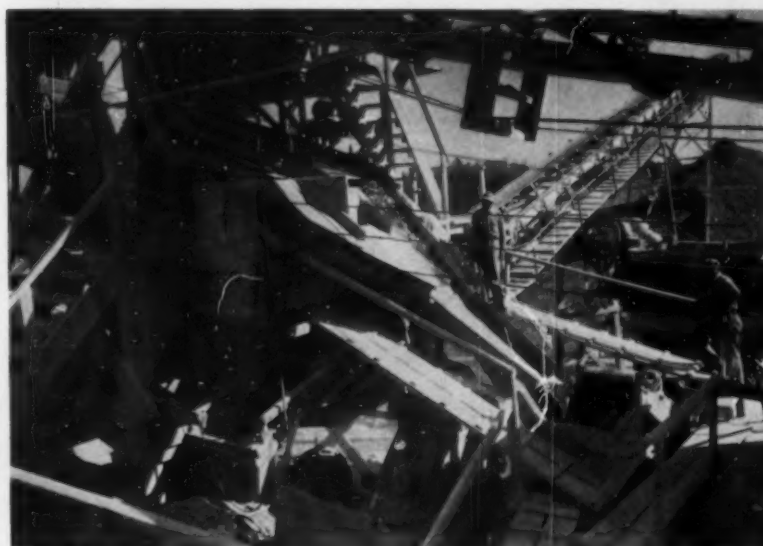
At the next screening station, the production of manufactured sand begins. There are two 5 x 14-ft. triple-deck vibrating screens at this point and a No. 448 Allis-Chalmers Pulverator. These screens are set to screen



Stacker used for stockpiling cobbles. On left is primary conveyor from surge stockpile



First cone crusher with stacker for cobbles. One screen is located over the other, the second to scalp out dirty material. Conveyor on the left goes to next screening station and stacker



Screening station showing all of five belt conveyors in background for 1½-in. stone

out the No. 4 to $\frac{3}{8}$ -in. size for immediate stacking over the tunnel. Plus $\frac{3}{4}$ -in. is put through the Pulverator and is conveyed to the sand production station which is the final processing stage. A split screen panel on the intermediate decks of both screens, with 4-mesh and $\frac{3}{8}$ -in. openings, enables an additional separation so that some of the $\frac{3}{8}$ -in. product down to about 5/32-in. can be carried along to the final station for further processing in the manufacture of sand. Similarly No. 4 to 5/32-in. size is carried forward. Minus 5/32-in. drops onto a horizontal 24-in. belt conveyor that terminates at the sand stacker and makes up part of the sand product.

A 24-in. inclined belt conveyor delivers the unfinished products to the final screening station where there are two 4 x 12-ft. double-deck vibrating screens set side by side. Under them are a No. 322 type R Allis-Chalmers reduction crusher and a 6 x 12-ft. Hardinge rod mill. These screens carry $\frac{3}{8}$ - and 5/32-in. screen openings, top and bottom decks respectively. Plus $\frac{3}{8}$ -in. stone is fed into the type R crusher for reduction to sand size range and the product discharged is carried on a 24-in. belt conveyor back to the preceding screening station. Thus, a circuit is completed.

Plus 5/32- to $\frac{3}{8}$ -in. stone from the screens is the rod mill feed. This machine is operated in open circuit. Minus 5/32-in. stone through the screens and that discharged from the rod mill both comprise part of the finished sand to join with the minus 5/32-in. material and some No. 4 to 5/32-in. size carried forward from the preceding screening station on the 24-in. conveyor delivering to the sand stacker. Alongside the rod mill is a 24-in. twin screw washer which is one of the means of adjusting the sand gradation. Varying amounts of the rod mill product are fed into the washer by a screw conveyor, the amount depending upon any correction needed. Minus 5/32-in. stone through the overhead screens can also be fed into this washer in varying amounts. Both the washer and the 24-in. conveyor bringing minus 5/32-in. stone from the previous screening station transfer to the stacking conveyor belt.

A Sauerman hoist and 1-cu. yd. bottomless Crescent bucket are the means of inter-blending the sand in storage and for moving the sand around the outside of the pile over

the T.V.A. reclaiming tunnel.

Production of the four sizes of coarse aggregates to meet T.V.A. specifications is not difficult, but the production of manufactured sand depends upon continuous control in operation. Specifications for the sand are as rigid as any and require that certain percentages pass seven sets of sieves within close tolerance limits. Sand must have a fineness modulus between 2.3 and 3.2 and meet the following gradation:

Sieve	Percent Passing
No. 4	95-100
No. 8	75-90
No. 16	50-70
No. 30	30-50
No. 50	15-30
No. 100	8-13
No. 200	Not more than 60 percent of the minus No. 100.

Certain adjustments are sometimes needed, according to tests of samples taken about every one-and-one-half hours at the point where the T.V.A. reclaiming belt conveyor discharges into the concrete batching bins. At times there is a tendency to have too high a percentage of fines which indicates that more of the sand must be put through the washer to wash out fines. The percentage of fines to be overflowed is controlled by regulating the volume of water fed into the washer. Water for the purpose is furnished by a 3- and a 5-in. centrifugal pump. Fines overflowing the washer are wasted into a sump.

The sand plant operation depends upon having a controlled rate of feed to it, but on occasion some adjustments must be made to meet intermediate sieve requirements. Several simple adjustments can be made. Screen cloth openings can be changed slightly, or the setting of the last crusher in the sequence could be changed. The percentage of feed put through the rod mill can be changed, more or less, to alter the percentages between certain sieves. This machine turns at a constant speed of about 15 r.p.m. and carries 2, 2½- and 3-in. diameter rods.

Particle shape must also be considered since elongated particles and slivers are undesirable. Selection of certain types of crushers was based on their ability to produce "cubed" particles. Sand as produced, is a product of four different types of crushers—gyratory, cone, impact and rod mill. Probably 50 per cent of the sand produced is the result of reduction through crushers known for their ability to make "cubed" particles. Of the total volume, about 15 per cent of the sand is processed through the

rod mill. Probably the most unique thing in the production of stone sand is that nearly all the particles are produced in open circuit. The fraction crushed through the Allis-Chalmers type R crusher is all that is re-sized after reduction. Another point of interest is that the sand as produced just about meets the specifications without the need for hydraulic classification. Wastage by washing out extreme fines is very slight.

Of a total of 1,000,000 tons, 300,000 must be sand. To supplement the amount of sand produced along with the coarse aggregates, an auxiliary tunnel conveyor with a 24-in. belt was built underneath the $\frac{3}{4}$ -in. stone stockpile. Stone from this pile is reclaimed back to the third set of screens, over the short-head cone crusher. This is a means of regulating the load to the sand plant. Sand is produced continuously over a 7-day week, while the rest of the plant runs 6 days, sometimes in two 9-hr. shifts.

Stockpiles, when filled, to a 50-ft. maximum height under the stackers contain about 106,000 tons of aggregates total, to be reclaimed on the 36-in. T.V.A. tunnel belt. Stone is withdrawn from the stockpiles tunnel gates, one size at a time, to fill the T.V.A. concrete plant bins. Sometimes the stone is washed over a vibrating screen at a transfer station. About 50,000 tons were produced and stockpiled in advance of actual concrete construction.

Birmingham Slag Co. will have completed its contract by about January 1, 1943. J. G. Graham, who was superintendent at the Cherokee dam aggregates plant, is general superintendent. O. E. Bentley is day superintendent and J. D. Stewart is night superintendent. R. E. Burgess, newly-appointed assistant general manager of the company, formerly general superintendent of operations outside Birmingham, Ala., is in general charge. G. C. McCullough is vice-president and general manager of the company.

Boost Mica Prices

COLONIAL MICA CORPORATION, Middletown, Conn., federal subsidiary for the Metal Reserves Corporation, has announced through R. B. Ladoo, vice-president, that the price for punch mica has been increased from 22c to 30c per lb., and the bonus for India trim from 25 percent to 40 percent. These increases have been approved by OPA.

Bus Transports Men to Work

MANY rock products companies with plants that are off the beaten path are concerned with how their employes are to get to work. Public transportation systems are not always available and the tires on employes' personal automobiles are wearing out.

Down in Montgomery, Ala., where there are four sand and gravel plants operated by the Montgomery Gravel Co. and the Roquemore Gravel and Slag Co., subsidiaries of the Birmingham Slag Co., this employment problem is being solved by providing free transportation for all employes who have no way to get to work.

In that area, employes' homes really are more inaccessible to regular transportation than the plants where they work are. The majority are negroes who live in houses scattered about outside the city of Montgomery. Until now, six or seven men would depend upon a "jalopy" to take them to work. Some had to travel from somewhere in the country north of the city to a plant the other side of town and the reverse.

Recognizing the need for some dependable form of transportation, company officials made application with the War Production Board, automotive division, for approval of a plan to start a bus service. Approval was granted. The plants are engaged in producing materials for war production, which was one condition that had to be met. The application had to be accompanied with factual data on the tire mileage that would be saved by providing a single company-owned "bus" in place of private automobiles, the mileage that would have to be covered and other pertinent information.

Upon acceptance of its proposal, the company purchased the trailer

shown herewith, which is hauled by a Dodge dump truck that was part of the regular company fleet. Cost of the trailer, which was manufactured by Utility Trailer Works, Inc., of Montgomery, was \$1500.

Bringing the men to work involves moving as many as 100 to 150 men a day and six and one-half hours driving time with the bus. The bus travels over 100 miles each day. Working hour schedules were readjusted to conform with driving time and are now as follows:

No. 2 and No. 3 Plants

6:00 a.m. to 12:00 noon.....	6
12:30 p.m. to 6:30 p.m.	6
	<hr/> 12 hr.

No. 4 Plant

7:00 a.m. to 12:00 noon.....	5
12:30 p.m. to 5:30 p.m.	5
	<hr/> 10 hr.

No. 1 Plant

8:00 a.m. to 12:30 p.m.	4½
1:00 p.m. to 7:30 p.m.	6½
	<hr/> 11 hr.

or

1:00 p.m. to 4:30 p.m. or 8 hr.

Here's the daily bus schedule:

MORNING

Leave Shop for plants No. 2 and 3 at.....5:00 a.m.
 Pass thru Montgomery and Hunter St. at.....5:30 a.m.
 Arrive Plants No. 2 and No. 3 (Shift starts at 6:00 a.m.) at.....5:45 a.m.
 Leave Plants No. 2 and No. 3 at.....6:00 a.m.
 Pass thru Hunter St. and Montgomery at.....6:30 a.m.
 Arrive Plant No. 4 (Shift starts at 7:00 a.m.) at....6:45 a.m.
 Leave Plant No. 4 at.....7:00 a.m.

Pass north Montgomery and

Plant No. 1 at.....7:15 a.m.
 Arrive Millbrook at.....7:30 a.m.
 Leave Millbrook at.....7:30 a.m.
 Pass Jackson Lake at.....7:40 a.m.
 Arrive Plant No. 1 (Shift starts at 8:00 a.m.) at...7:45 a.m.
 Back at Shop at.....8:00 a.m.

EVENING

(With 11-hr. shift at Plant No. 1)

Leave shop for Plant No. 4 (Shift over at 5:30 p.m.) at.....5:30 a.m.
 Arrive Plant No. 4 at.....5:45 p.m.
 Leave Plant No. 4 at.....5:50 p.m.
 Pass thru Montgomery at...6:00 p.m.
 Pass Hunter Station at....6:30 p.m.
 Arrive Plants No. 2 and No. 3 (Shifts over at 6:30 p.m.) at.....6:45 p.m.
 Leave Plants No. 2 and No. 3 at.....7:00 p.m.
 Arrive Plant No. 1 (Shift over at 7:30 p.m.) at....7:45 p.m.
 Leave Plant No. 1 at.....8:00 p.m.
 Pass Jackson Lake at....8:15 p.m.
 Arrive Millbrook at.....8:30 p.m.
 Leave Millbrook at.....8:30 p.m.
 Arrive back at Shop at....9:00 p.m.

The driver, an experienced chauffeur, makes his pickups close to each man's home and returns the bus to the shop between his morning and afternoon rounds. Employes are also picked up for transportation to and from the asphaltic concrete and ready-mixed concrete plants, but many of them can get other transportation to those plants. Bus service is also made available for overtime work.

The bus was one built in Montgomery as an experiment for shipyard workers. It is modeled along the idea of a sight-seeing bus with one long bench the entire length that will seat 32 men, 16 on each side. Total seating capacity is 40 and there is standing room for at least 12 more. Capacity is 10,000 lb.



Company-owned bus of Montgomery Gravel Co., Montgomery, Ala., transports men to and from work at four sand and gravel plants

MATERIAL HANDLING

Gravity Flow Batching

Powell Bros. operates large capacity ready mixed concrete plant. Also sells ready mix lime mortar

TO COMPLETE ITS LINE of building products and services, Powell Bros., Alameda, Calif., decided to go into the ready mixed concrete business. The company was originally started in 1889 as a construction contracting business by three brothers, C. W., J. A., and R. V. Powell as

partners. In 1918, however, the contracting end of the business was dropped, and the company became one of the largest building material dealers in this area with big stocks of cement, lime, gypsum, sand, gravel, etc., to supply building contractors. In addition to ready mixed



Batching plant, showing aggregate bins to the left, 250-bbl. cement silos with connecting screw conveyor above, and 1000-bbl. cement storage silo below



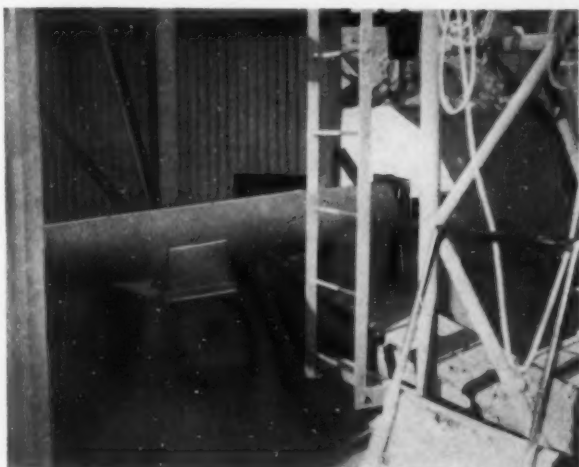
Front end view of one of the newest ready mixed concrete trucks having a four-wheel drive and air brakes

concrete, lime mortar is prepared for the construction industry.

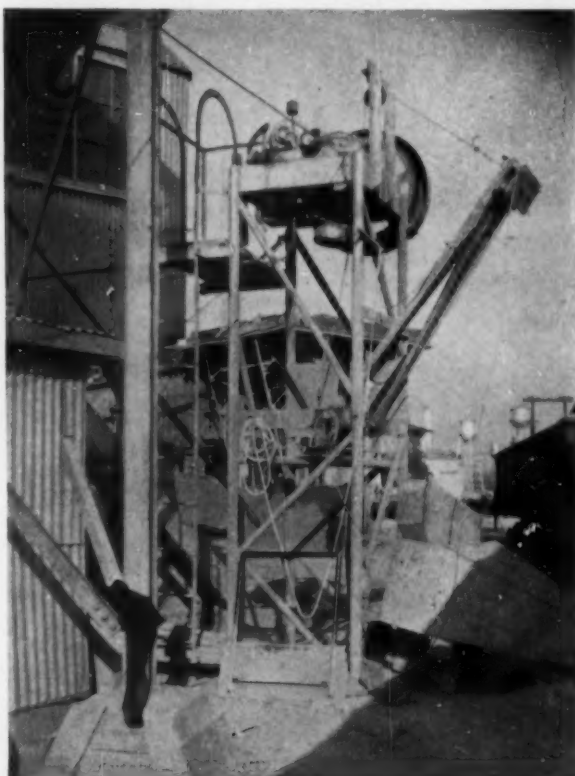
Aggregates may be received either by barge or by rail. A long belt conveyor takes the aggregates received by barge and elevates the material over a trestle near the plant where a shuttle type tripper unloads the belt at any point for stockpiling. When aggregates are received by rail, a Link-Belt shovel equipped with a $1\frac{1}{2}$ -cu. yd. bucket unloads the cars into stockpiles or swings its load up into the 250-ton capacity aggregate compartment bins.



Unusual installation of scale on cement batcher hopper. Electric vibrator on hopper prevents cement from "hanging up"



Above: Screw conveyor on right takes cement from car unloader into boot of bucket elevator. Other screw conveyor moves cement from 1000-bbl. silo into screw conveyor from cars and then up bucket elevator to 250-bbl. silo on top of plant



Right: Car unloader which unloads bulk cement into screw conveyor

The batching plant was built by Bodinson Manufacturing Co., to designs prepared in collaboration with Powell Bros. It is a direct flow or gravity type plant. Aggregates segregated into six compartments in the 250-ton storage flow by gravity into a 3-cu. yd. batcher hopper with Kron automatic weighing scale.

Cement is received in railroad cars on a track adjacent to the plant in sacks or bulk. Workmen unload cars by dumping into a hopper feeding a Clark unloader that transfers the cement to a short screw conveyor. The screw conveyor dumps to the boot of an enclosed bucket elevator, 65-ft. centers, which feeds another screw conveyor over two enclosed steel silos, each of which holds 250-bbl. When one of these silos overflows the screw carries the cement to the second silo. If the second silo should become filled, the cement overflows into a pipe which carries the cement to the main steel storage silo near ground level which holds 1000-bbl. Cement in the 1000-bbl. silo is kept agitated by compressed air so that it will feed freely to a short screw conveyor dumping into the screw conveyor going to the boot of the bucket elevator. A Kellogg compressor supplies compressed air.

Ready mixed concrete trucks receive cement from a separate batcher hopper holding 3000-lb. of cement and is weighed out by a Kron scale. A W. S. Tyler electric vibrator is used on the cement batcher hopper to prevent the cement from "hanging up."

Water for the mix is accurately controlled by a Neptune water meter and scale. Trucks are also equipped with water tanks in case a long haul requires that the water be added near the job to be poured.

When pressed to capacity, the plant will batch out 100-cu. yd. an hour, but a normal run averages around 87-cu. yd. an hour.

Eight mixer trucks are operated, three Blaw-Knox, 4-cu. yd.; two Jaeger, 3-cu. yd.; and three Rex, one a 4-cu. yd. and two 2½-cu. yd. capacity. One of the most recent purchases, shown in the illustration, is a 6-cyl. Ford with a four-wheel drive Warford axle and Westinghouse air brakes on which a Blaw-Knox mixer is mounted. The company also operates eight dump trucks, five 8-ton trucks, and three 5-ton trucks for making deliveries of building materials and hauling aggregate, cement, etc.

Officers of the company are J. A.

Powell, president and one of the founders; R. J. Powell, secretary, now in military service, and H. W. Powell, treasurer, in charge of operations and sales.

End of a Job

SUPERIOR PORTLAND CEMENT, INC., Seattle, Wash., is reported to have made probably the last bulk shipment of cement to the Grand Coulee dam project. The shipment, consisting of eight carloads, will be stored in the cement silos for use in the east power house, in a utility building and other appurtenant structures. Hereafter, cement will be brought to the project in sacks, it was indicated. The dam has required 11,293,354 bbl. of cement, transported in 47,000 cars. During the height of concrete pouring, as many as 113 carloads were unloaded in a single day.

New Use for Silica

SILICA "aerogel" is now being used in powder form as a dulling agent to eliminate gloss in camouflage paints. Used as an insulation, research experts report that the wall thickness of refrigerators may be cut from the present 3 in. to 1½ in., permitting greater capacity for a given size box.

CONVENTION

Critical Industrial Minerals In War

Fall Division Meeting of A.I.M.M.E. centers attention on cement, magnesia, mica, and other essential minerals

PAPERS on portland cement manufacture, cement plant safety and quarrying were particularly appropriate at the Fall Meeting of the Industrial Minerals Division of the



Dr. B. L. Miller, Lehigh University, chairman of Industrial Minerals Division

American Institute of Mining Engineers October 22-24, at Bethlehem, Penn., in the Lehigh Valley. The program attracted many cement men from the Lehigh Valley, which is world-famous for its concentration of plants.

An entire evening session was devoted to the subject. Dr. B. L. Miller, Lehigh University, chairman of the Division, gave an illustrated talk on the "Geology of Cement and Slate Regions of Eastern Pennsylvania." He spoke principally on the origin of the Jacksonburg formation, source of cement rock for the Lehigh Valley plants, which was considered ideal chemically at one time for cement manufacture. Modern specifications require that some of the plants bring in high calcium limestone from outside sources to correct the mix. Variations in calcium carbonate content throughout the region were discussed; also the need for selective quarrying

By BROR NORDBERG

or excavation at different depths in a given quarry to hold the calcium carbonate up and thus reduce the amount of purchased stone. Dr. Miller estimated that over 900,000,000 bbl. of portland cement have been manufactured in the Valley since 1872 when Saylor started to make it.

Following Dr. Miller's talk, which pointed out the problems in manufacturing portland cement from Lehigh Valley rock, L. G. Sprague, chief chemist of the Universal Atlas Cement Co., Northampton plant, described in detail how his company proposes to make cement in its mill now under construction. His talk was illustrated by slides. The following day, the Universal Atlas Cement Co. was host to the convention on an all-day escorted tour through the new plant, which will start operating early in 1943. The trip included transportation to the mill from the Northampton railway station and box lunches for all. Representatives of the Separation Process Co. gave a demonstration of limestone beneficiation by froth flotation at the mill.

There were other papers of interest to ROCK PRODUCTS' readers. These included recent developments in the

production of magnesia for refractories, the concentration of gravel size minerals, the use of talc in ceramic insulators, uses of silica sand for glass making and other miscellaneous subjects.

Gravel Size Separations

O. C. RALSTON, U. S. Bureau of Mines, presented a paper on "Sticky-Surface Concentration of Gravel-Size Minerals" which he had prepared with John Dasher and James Norman, also of the Bureau of Mines. Mr. Ralston's paper told of the work of the Bureau of Mines in developing a process to extend the range of separation of minerals by difference in wettability up to 2-in. size. The work was undertaken to find a practical means of separation of minerals, of similar densities, that are sold in sizes coarser than can be treated by many mineral-dressing methods. The use of a rotating semisubmerged cone, with a sticky inside surface, was described which has been successfully used to make separations of certain mixes of mineral. Filmed material was fed into the cone, whose inside surface was coated with cup grease.

The work has been interrupted by the war, but it affords some interesting possibilities to ROCK PRODUCTS' readers. One suggestion is for the



Oliver Bowles, U. S. Bureau of Mines, left, and W. C. Phalen, consulting geologist. The Solvay Process Co., Syracuse, N. Y.

separation of unsound materials from gravel. Certain phosphate gravel sizes desired for special sale could conceivably be processed in this way and possibly, chert separations could be made from cement plant raw materials. The paper had been preprinted as technical publication No. 1537 by the A.I.M.M.E.

Magnesia for Refractories

G. E. SEIL, technical director, E. J. Lavino and Co., in a paper, "New Developments in the Production of Magnesia for Refractories," reviewed the various chemical processes of extraction. The formulae for the more important chemical reactions were reproduced.

The reactions for the H_2S process, which is to be used in a new plant under construction in the Philadelphia area, are:

- $CaMg(CO_3)_2 + \text{Heat} = CaO + MgO + 2 CO_2$
- $CaO + MgO + 2 H_2O = Ca(OH)_2 + Mg(OH)_2$
- $Ca(OH)_2 + Mg(OH)_2 + 2 H_2S = Ca(SH)_2 + Mg(OH)_2 + 2 H_2O$
(soluble) (insoluble)
- $Ca(SH)_2 + CO_2 + H_2O = CaCO_3 + 2 H_2S$
- $Mg(OH)_2 + \text{Heat} = MgO + 2 H_2O$

The reactions in the NH_4Cl process are:

- $2 NaCl + 2 NH_3 + 2 H_2O + 2 CO_2 = 2 NH_4Cl + 2 NaHCO_3$
- $Ca(OH)_2 + Mg(OH)_2 + 2 NH_4Cl = Mg(OH)_2 + CaCl_2 + 2 NH_3 + 2 H_2O$
(insoluble) (soluble)
- $Mg(OH)_2 + \text{Heat} = MgO + H_2O$

In the sea water-dolomite process the reactions are:

- $2 CaMg(CO_3)_2 + \text{Heat} = 2 CaO + 2 MgO + 4 CO_2$
- $MgCl_2 + MgSO_4 + CaCl_2 + 2 H_2O = 2 MgCl_2 + CaSO_4 \cdot 2 H_2O$
(sea water) (insoluble)
- $2 MgCl_2 + 2 MgO + 2 CaO + 4 H_2O = 4 Mg(OH)_2 + 2 CaCl_2$
(insoluble)
- $4 Mg(OH)_2 + \text{Heat} = 4 MgO + 4 H_2O$

In the CO_2 process, the reactions are:

- $4 CaMg(CO_3)_2 + \text{Heat} = 4 CaO + 4 MgO + 8 CO_2$
- $4 CaO + 4 MgO + 8 H_2O = 4 Ca(OH)_2 + 4 Mg(OH)_2$
- $4 Ca(OH)_2 + 4 Mg(OH)_2 + 12 CO_2 = 4 CaCO_3 + 4 Mg(HCO_3)_2 + 4 H_2O$
(insoluble) (soluble)
- $4 Mg(HCO_3)_2 + \text{Heat} = 3 MgCO_3 \cdot Mg(OH)_2 \cdot 3 H_2O + 5 CO_2$
- $3 MgCO_3 \cdot Mg(OH)_2 \cdot 3 H_2O + \text{Heat} = 4 MgO + 3 CO_2 + 4 H_2O$

Reactions for the sea water-lime process are:

- $2 CaCO_3 + \text{Heat} = 2 CaO + 2 CO_2$
(shells)
- $MgCl_2 + MgSO_4 + CaCl_2 + 2 H_2O = 2 MgCl_2 + CaSO_4 \cdot 2 H_2O$
(sea water) (insoluble)
- $2 MgCl_2 + 2 CaO + 2 H_2O = 2 Mg(OH)_2 + 2 CaCl_2$
(insoluble)
- $2 Mg(OH)_2 + \text{Heat} = 2 MgO + 2 H_2O$

In addition to these reactions, Mr. Seil summarized briefly other methods of extraction, both physical and chemical. He said that one of the most important requirements in the refractories is that they be burned to low porosity, for a minimum residual shrinkage to prevent warping and shrinkage.



A.I.M.M.E. guests of Universal Atlas were transported from Northampton rail terminal to plant on flat cars pulled by Diesel locomotive

Safety Practices in Quarrying

A. J. R. CURTIS, Portland Cement Association, in his paper "Safety

worst records among the heavy industries, but it now heads the list, said Mr. Curtis. The accident record for member companies is considerably better than for general quarrying and for quarrying by non-member cement companies, according to the records based on man-hours of employment which he presented. The pooling of experiences by an organized group was credited as mainly responsible.

Statistical facts are the backbone of the program, he said, in commenting on some of the needs for an effective program. Over 80 percent of all the accidents are recorded. It is essential that the superintendent of operations be qualified on matters of personnel and that he be safety-minded. Active safety committees are necessary for the quarries and every man must work for the reduction of accidents.

Mr. Curtis analyzed the records of 100 accidents that took place from January, 1941, to October, 1942. Accidents occur about twice as often in the month of February as in March, even though February is a month of



L. J. Boucher, assistant general superintendent, Universal Atlas Northampton plant, describing quarry to A.I.M.M.E. guests



Box lunch is served to A.I.M.M.E. guests in Northampton plant



Left to right: H. A. Reichenbach, general superintendent, Nazareth Cement Co., and chairman of the fall meeting, A.I.M.M.E.; P. J. Everett, in charge of employment and welfare, Universal Atlas Cement Co., Northampton plant; and Donald E. Koch, acting superintendent, Giant Portland Cement Co.



Mr. Daugherty, one of the Universal Atlas guides, explains primary crusher operation to A.I.M.E. guests

low production. On Monday about 20 percent more accidents occur than for the week-day average. A further breakdown showed that fatigue, based on time of day, is not a factor. Neither do extremes in youth and age have a bearing on the occurrence of accidents.

Drilling and Blasting

H. I. PHEMISTER, American Cyanamid and Chemical Co., traced the evolution of drilling and blasting in the Lehigh Valley up to the present time when, according to him, an estimated 1,500,000 lb. of explosives are annually used. Quarrying was done by pick and bars in the beginning. In the early days of drilling and blasting a 75 percent dynamite cost a dollar a pound and was very unsafe compared to present-day explosives. The first churn drill was used in 1911 and it was steam-driven.

Most of the drills are now electrically-driven, he said, and 6-in. holes are standard in the Valley. Primary drilling on low faces is sometimes done by wagon drills which have also replaced some tripod drills for snake holes and toe holes. Now, he said, it is common to space 6-in. holes 20 to 32 ft. apart with burdens of 18- to 24-ft. in shooting down faces around 245 ft. high. Whereas, in the early days drilling was governed by trial and error methods, definite drilling and blasting patterns are being studied out for the various quarries. Dynamite cartridges were 4 x 8 in. at first and the standard now is 5 in. diameter by 16, 24 or 30-in. lengths. Holes are loaded with a 60 percent dynamite charge at the base and sometimes as high as 75 percent strength. Slides were shown to illustrate the drilling, loading and blasting operations in a quarry, showing all the details including the wiring and use of Primacord.

A paper on "Talc in Radio Ceramic Insulators," read by T. A. Klinefelter, U. S. Bureau of Mines, covered some of the work being done to alleviate a shortage of the material, which is considered critical. Present specifications for radio insulators, as to chemical composition, are very rigid. Iron and lime are the troublesome impurities. A maximum of 1½ percent iron and 2 or 3 percent total impurities in talc will not cause failure to meet requirements. A paper on "Uses of Silica Sand in the Glass Industry in Missouri," preprinted as technical publication No. 1538, was not read.

ROCK PRODUCTS

New Universal Atlas Plant at Northampton, Penn.

A. I. M. M. E. paper describes how newest cement plant will operate

L. G. SPRAGUE, chief chemist of the Northampton plant, Universal Atlas Cement Co., at the Bethlehem, Penn., meeting of the Industrial Minerals Division of the American Institute of Mining and Metallurgical Engineers, October 22, presented a complete illustrated description of the general layout and mechanical details of the company's new mill under construction at Northampton, which is abstracted here in part. In his opening remarks, he reviewed the developments at Northampton in their relation to trends in the industry. The Universal Atlas Cement Co., in planning the new plant, took into consideration the need for the manufacture of different types of cements by variations of chemical composition. A wide variety of differently proportioned raw materials for cement can be made by the froth flotation system in the new plant, which adjusts mixes by a process of subtraction rather than by addition. Undesirable aluminates and silicates from

the available impure limestone deposits are to be discarded, in preference to adding high grade limestone from distant sources.

A 40-ft. face in the quarry will be drilled and blasted to furnish stone for the new plant, and the new plant set-up is based on truck haulage to the primary crusher located at the quarry entrance. Gasoline tractors with 10-cu. yd. side-dump, semi-trailers will be used. They will be hauled up a 10 percent incline, about 750 ft. long, by two electric hoists, with a Barney car to push the trucks to the top of the incline.

Truck Haulage From Quarry

Trucks will be dumped by a pneumatically-operated hook onto a pan conveyor feeder which regulates the flow into a 36- x 60-in. Fairmont roll of 400 t.p.h. capacity. Minus 8-in. stone from this point is to be conveyed by belt conveyor and split over two 5- x 10-ft. inclined vibrating screens. Oversize from the screens,



L. G. Sprague, chief chemist, Northampton plant, Universal Atlas Cement Co.

retained on $\frac{3}{4}$ -in. square mesh, is fed into a 425 t.p.h. capacity reversible hammer mill, driven by a 600-hp. motor, which is in closed-circuit with the $\frac{3}{4}$ -in. screens by belt conveyor. A movable tripper distributes the different grades of cement rock as desired in a 100- x 624-ft. storage building which also has provisions for storing sand, iron ore, gypsum and clinker.

Cement rock is to be ground in two separate closed-circuit grinding units, each having a primary and secondary side. The primary mill is a ball mill, 9 ft. 6 in. diameter and 8 ft. 8 in. long, in closed-circuit with a multizone rake classifier. Coarser particles from the rake classifier return to the feed end of the mill and the finer portion of the primary mill discharge enters a bowl classifier. This is in closed-circuit with the secondary mill, which is the same size as the primary mill. The particle size of this classifier-overflow is regulated largely by the amount of water used.

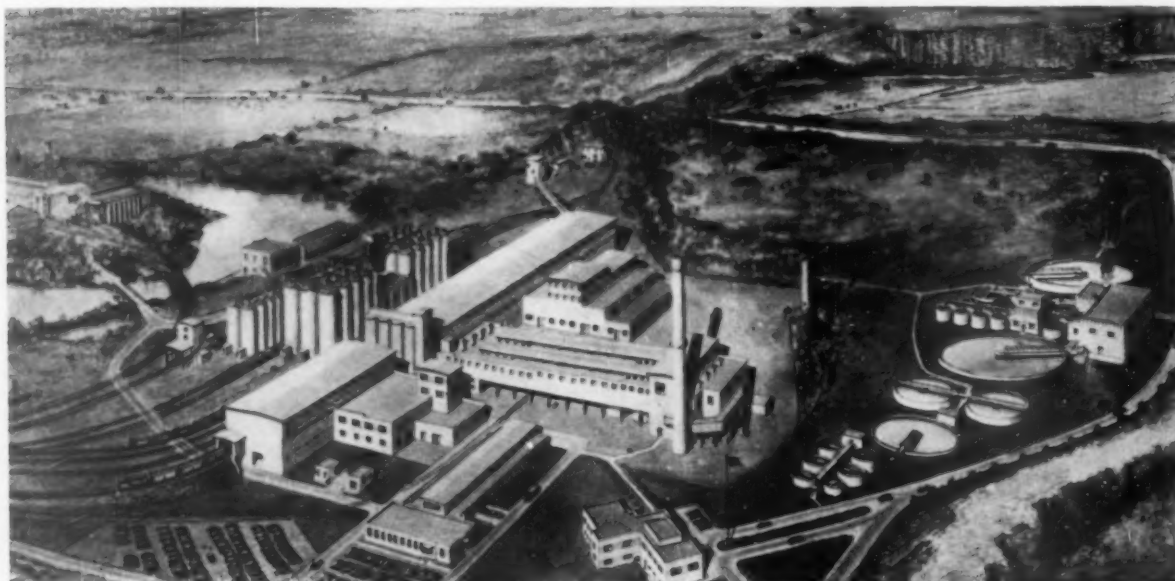
The slurry, overflowing the bowls of both units, containing 85 to 87 percent water, is pumped about 1000 ft. up the hill to the cement rock thickener which is 200-ft. diameter.

Mr. Sprague's paper pointed out that silica and iron ore are ground separately from the cement rock, which is a relatively new but logical development. These are ground in an 8 ft. x 7 ft. 8 in. ball mill in closed-circuit with a rake and bowl classifier and the ground sand, or iron ore, is pumped up the hill to its own thickener.

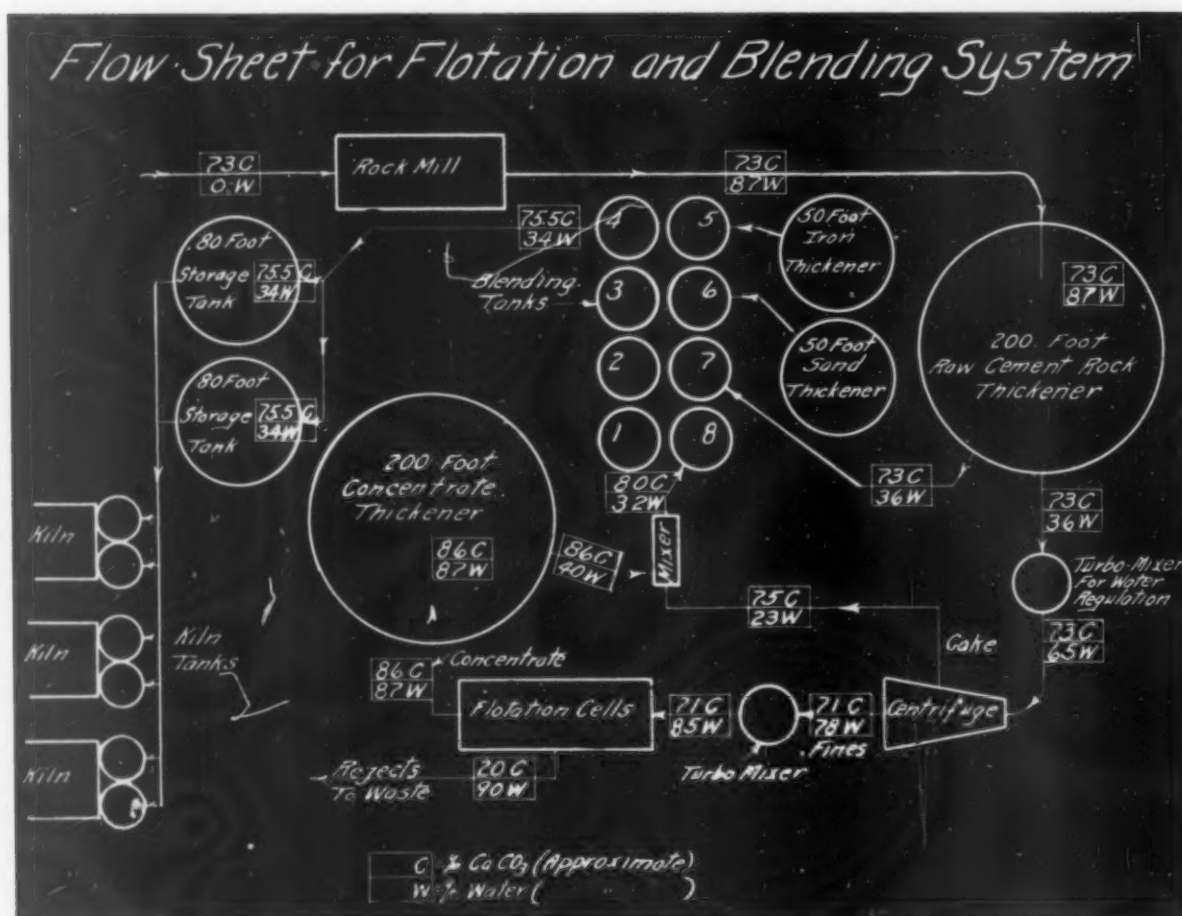
Thickened cement rock slurry, containing about 36 percent water, is pumped either to blending tanks or to a turbo-mixer for processing by



Close-up of slurry tanks and cell house



Aerial view of Northampton plant, Universal Atlas Cement Co., as it will appear when it is completed

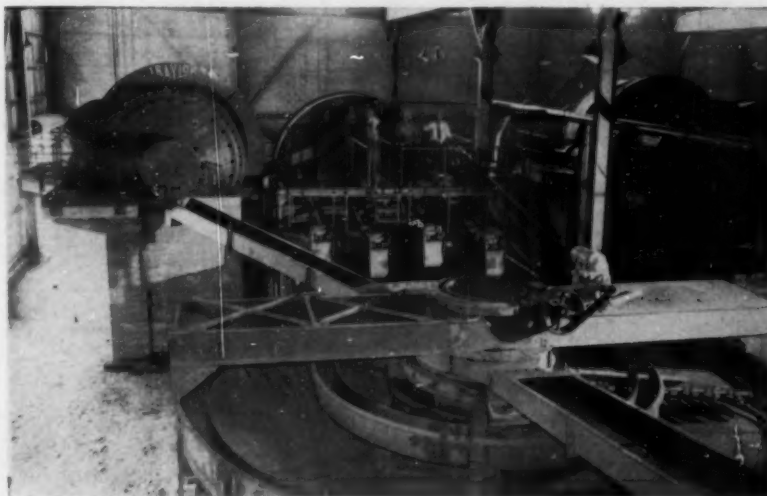


Raw material flow-sheet of Northampton plant, Universal Atlas Cement Co.

centrifugal classification and flotation. The clear water overflow from the thickener is returned to the raw grinding mill by gravity.

The cement rock in the quarry varies from 68 to 76 percent CaCO_3 , averaging about 73 percent, which is converted into a satisfactory mixture of 75.5 percent CaCO_3 as shown by the accompanying flowsheet covering the operation of the centrifuges, flotation and blending. If it is necessary to add sand or iron, or both, for special compositions, these materials are drawn from their thickeners to separate blending tanks and from there are added to the cement rock and concentrate in the proper proportion. This plant has seventy-two 66-in. flotation cells arranged in four parallel rows of 18 cells, and the final product of flotation containing about 86 percent CaCO_3 flows by gravity into a 200-ft. concentrate thickener.

Slurry from the kiln tanks (see flowsheet) is pumped to the constant level basin of the filters. Each kiln is provided with two slurry filter units of the rotating disc type. Each unit has nine discs 8 ft. 10 in. in diameter



Installation view of secondary mill, bowl classifier and rake

with a total filtering area of 936 sq. ft. The slurry enters the filters, containing about 36 percent water, and the cake discharged from the filters contains about 23 percent water. A motor-driven plunger pump forces the cake into the kiln.

Direct Firing Unit Coal Mills

The plant will have four kilns, which incidentally are shorter than most of the new kilns recently installed in large cement mills. Three are to be 10 ft. 6 in. x 250 ft. and the fourth is 9 ft. x 250 ft., of all-welded shell construction with stiffening rings every 20 ft. Each is to be carried on four box-type rings riding on solid forged rolls, which have water-cooled, bronze bearings and are equipped with flood oil lubrication. The drives will be 125-hp. adjustable speed d.c. motors connected to speed reducers. There are to be two manholes opposite each other and about 75 ft. from the discharge ends of the kilns to facilitate the handling of brick in and out of the kiln during a re-lining operation.

Firing is to be done by direct-firing unit coal mills and the clinker will be cooled in an air-quenching type cooler. It will then be stored in the large storage building ready for handling to hoppers of clinker mills.

There are three separate and complete grinding units for clinker, each consisting of a preliminary ball mill and ball-peb mill for finished grinding. Two feeding belts, one for clinker and one for gypsum, deliver the properly proportioned material to a bucket elevator which discharges directly into the preliminator which is a 9-ft. 6-in. diameter x 8-ft. 8-in. ball mill. The discharge from this mill is elevated and flows directly into an 8-x 30-ft. two-compartment ball-peb mill for final grinding. The discharge from this mill is elevated to two air

(Continued on page 79)



Corner of cell house, showing centrifuge machines



General view showing flotation cells and centrifuge machines in background

New Workers' Accident Hazards

National Safety Council's Cement and Quarry
Section Discusses War's Effects on Operation

GENERAL CHAIRMAN W. M. POWELL, Cement and Quarry Section, National Safety Council, who is safety director of the Medusa Portland Cement Co., Cleveland, in his opening remarks at the recent annual meeting in Chicago, pointed to the hazardous trend of the times in all industry and of the greater-than-ever necessity for training and extraordinary precautions in quarrying, stone mining and heavy milling operations.

In a paper briefly analyzing recent accident experience in portland cement plants, A. J. R. CURTIS, Portland Cement Association, pointed forcefully to the rapidly growing proportion of accidents to new workers and suggested remedies. Statistical evidence which Mr. Curtis quoted showed the following facts:

- (1) Accidents of all chargeable classes in the member plants of the P.C.A. have increased from 242 for the first 9 months of 1941 to 296 for the corresponding period of 1942, a gain of 22.3 percent.
- (2) The increase in accident frequency rate between these periods, taking into account the greater man-hours of exposure in 1942, is probably about 15 percent.
- (3) Of all of the injuries occurring in 1938, 7.5 percent were to men employed less than one year; in 1940, 18.9 percent were to men employed less than one year and in the first 9 months of 1942, 44.25 percent were to men employed less than one year.

Mr. Curtis used these figures to emphasize the "new man" problem phase of safety work. Some of his suggestions appear in an adjoining column.

Worker Training

PROF. JOHN I. YELLOTT, head of the department of mechanical engineering and chairman of the war training committee of the Illinois Institute of Technology, presented an absorbing paper on "Technical Training for War Industry."

Prof. Yellott said in part:

"Every intelligent plan for industry



A. J. R. Curtis, retiring secretary of Cement and Quarry Section

during the war must be based upon the assumption that young, able-bodied men with few or no dependents will be in the armed forces. Industry must rely upon the older men and upon women. With this as an assumption, let us consider the technical personnel requirements of the armed services and of industry.

"To invade and subdue the continent, we must call upon soldier-technicians who are equipped with the most perfect weapons which we can devise and who are technically trained to operate them. Accordingly, we cannot say that all of the technicians must be retained in industry while those with other aptitudes fight the battles. The Army and Navy need the technicians almost as badly as industry, and so obviously a vast number must be trained. It has been estimated that the Army lacks over 800,000 specialists. The situation of the Navy is even more serious, since a modern battleship or aircraft carrier is primarily an ultra-compact collection of intricate mechanical and electrical devices. Industry must accordingly prepare to lose its young technicians, and foresighted managers are taking the steps which this situation indicates.

"The number of graduate engineers who could be used by the Army, Navy, and the Air Force far exceeds the output of the engineering colleges. Industry has, in the past, always used the normal output of these colleges, but it must be expected that, for the next few years, virtually every able-bodied technical graduate will find himself in the armed services shortly after he leaves college."

Prof. Yellott concluded with an excellent description of the war training program available for workers, referring particularly to the Job Instructor Training courses in industry:

"The most widespread of the training programs is that of the Training-Within-Industry division, of the War Manpower Commission. Training-Within-Industry has been set up to assist industry in its training jobs, with full realization of the fact that the great bulk of the training for new jobs must be done in the plant, using actual production equipment. Training-Within-Industry has branches in all principal cities, where competent



W. M. Powell, general chairman of Cement and Quarry Section

PERSONNEL

training authorities are available to consult with industry and to help industry to solve its own problems.

"One of the principal activities of Training-Within-Industry has been the remarkably successful Job Instructor Training Program, now known throughout the nation as J.I.T.



J. R. Boyd, new secretary, Cement and Quarry Section, is administrative director, National Crushed Stone Association

This is a unique contribution to industrial training methods, consisting of five two-hour sessions, held in the plant, in which men and women are taught the most effective method of teaching jobs to other workers. Literally, the program is one training job instructors in the four-step method of teaching. The four essential parts of any teaching job are Preparation, Presentation, Performance and Follow-Up, and when these are combined with proper selection of workers and intelligent job breakdowns, virtually any normal individual can be taught to perform any industrial task.

"J.I.T. is given at no cost to the industry by men who have themselves been given an intensive course in how to put on this particular program."

This paper undoubtedly stimulated interest on the part of cementmen in the supervisor conference courses which have been circulated to member plants by the Bureau of Accident Prevention of the Portland Cement Association.

Plant Security

Security against sabotage and other war hazards also received considerable attention on the program. J. H. EAST, Jr., mining engineer, U. S. Bureau of

Mines, who was the speaker at the annual luncheon, on Thursday, provided a great deal of helpful information on the subject as did Col. H. A. RENINGER, assistant director, Third Civilian Defense Region, Baltimore, Md., who spoke at the Thursday afternoon session.

Mr. East's discussion, which was entirely off the record, outlined sabotage methods and precautions. Col. Reninger emphasized the great necessity of protecting plants against direct enemy attack, using blackout and other protective methods. Those who are interested can secure assistance from the Civilian Defense Office nearest them. If in doubt as to whom to write, a leaflet listing addresses for the various areas can be obtained on request to the Chamber of Commerce of the United States, Washington, D. C.

Handling Explosives

At the Thursday afternoon session E. L. THAYER, engineer, Technical Division, Explosives Department, E. I. du Pont de Nemours & Co., presented a comprehensive paper outlining fundamentals of quarry blasting. Mr. Thayer's paper contained much information with which every quarryman should be familiar. It is abstracted elsewhere in this issue of Rock Products.

Following Mr. Thayer's paper there was a panel discussion of the subject by Herbert Rich, quarry superintendent, plant No. 4, Pennsylvania-Dixie Cement Corporation, Nazareth, Pa., and G. S. Parker, plant superintendent, Dewey Portland Cement Co., Davenport, Iowa. Others who added informal discussion on this subject included Bernard McNulty, president, Marblehead Lime Co., Johan Norvig, general superintendent, Pennsylvania-Dixie Cement Corp., M. P. Greer, safety engineer, Marquette Cement Mfg. Co., Cape Girardeau, Mo., and David Adam, safety engineer, Lawrence Portland Cement Co., Northampton, Pa.

Election of Officers

At the annual election of officers, on Thursday afternoon, the candidates, placed in nomination by the nominating committee, were elected by unanimous vote:

General Chairman, W. M. Powell, Medusa Portland Cement Co., Cleveland, Ohio; Vice-Chairman, H. F. Yotter, The General Crushed Stone Co., Easton, Penn.; Vice-Chairman, David

(Continued on page 80)

TRAINING NEW EMPLOYEES

(Suggestions by A. J. R. Curtis, in paper before annual meeting of Cement and Quarry Section at the National Safety Congress)

- (1) Selling safety to the new worker is almost entirely one of selling him on your organization and those of whom it consists.
- (2) Reception of the new worker should be carefully planned and rehearsed. He should be impressed by interviews with his superintendent, personnel and safety directors and department head. Each must have specific ideas to implant and specific impressions to leave.
- (3) Since the new workman may have infrequent opportunities to repeat these contacts he will base his estimates and acquire his impressions of his leaders largely from what he absorbs at first meeting. He must be impressed with the dynamic qualities of the plant leadership and the interest of his leaders in his own safety.
- (4) Fellow workers must develop a feeling of good will and good fellowship that will meet the new man at the entrance and go with him in the plant.
- (5) You can get the new recruit steamed up more quickly by making it obvious that he is most fortunate in landing among good friends and in the midst of a hot-bed of safety enthusiasm.
- (6) In introducing a new worker to an older employee refer to special safety records, honors and positions held by the latter.
- (7) Every loyal worker must be a "good neighbor" to every new man.
- (8) You must have an honest-to-goodness safety program, which you cannot have unless top management participates actively. No "propaganda campaign" will do—this is a heart and soul job.
- (9) The best leader in the world can't do the job alone. Fellow workers are the ones who make it natural, pleasant and interesting for the new man to line up and remain lined up for safety.
- (10) Let the new man see an active and enthusiastic plant safety committee in action. Have him visit safety committee meetings and make sure that he understands and likes what goes on.
- (11) "Sell" new men on wanting to become a member of the committee and of serving it whenever requested.
- (12) "Sell" new men on the soundness of safety rules and regulations. Tell them how the rules were developed, who developed them and why.
- (13) Don't overlook the special need for warning and instruction to men tackling new or dangerous jobs.
- (14) Remember the necessity for frequent repetition of instructions and warnings. The new man must be taught to ASK rather than take a chance.
- (15) The most powerful instrument for protecting the new worker is Good Example.

Cheaper to Move Plant to Job

Ready Mixed Concrete Corporation
has built five plants in Indianapolis,
Ind., to cut down mileage of hauls

By PAUL J. PIRMAN

CONSERVATION of man power and truck mileage has been one of the constant aims of the Ready Mixed Concrete Corp., Indianapolis, Ind., in its widespread operations. This experience has been particularly valuable under war time restrictions.

Just recently the company was put to the test in filling a contract for 75,000 cu. yd. of concrete for the Tibbs avenue plant of Allison Engineering Co. Realizing that it should make every effort to conserve motor equipment, gasoline and rubber, the management moved the Broad Ripple plant on leased property adjacent to the project at a point which would require an average haul of 1,000 ft. Sand and gravel is received on a 30-in. conveyor belt which delivers it to the 140-ton steel proportioning bin.

The receiving hopper is flush with the top of the ground. Gravel trucks dump into the receiving hopper without backing up a ramp or turning. Aggregate weighing batchers were placed under the bin which discharged onto another 30-in. belt, delivering the batch of aggregates to the receiving hopper of the mixer in the mixing plant. Mixing water enters at the rear of the hopper and is discharged at the same time the sand, gravel and cement are dumped. This feature cuts down the charging time of the mixer about 50 percent.

The cement proportioning bin is placed directly over the mixer and is equipped with a hopper, screw conveyor and bucket elevator for conveying the cement into the bin. The cement weigh batcher discharges into the aggregates hopper. While a batch is being mixed another complete batch of aggregates, cement and water are always waiting to be discharged into the mixer. Since the plant is not located on a railroad siding the cement is unloaded by means of a screw conveyor and bucket elevator into a 300-ton bin at a railroad siding 1 1/4 miles away. It is transported from this bin to the mixing plant in 3-cu. yd. steel tanks

hailed on Ford dump trucks. These tanks are so constructed that when in dumping position all parts of the tanks are at an angle of 60 deg. with the horizontal.

The discharging point is equipped with a rotary valve from which the cement is discharged into the receiving hopper. From the hopper the cement is transported by the screw conveyor and bucket elevator to the plant bin. When the plant is down these tanks can be lifted from the Ford trucks with a crane in about five minutes thus releasing these trucks for other work.

This plant, which has an average capacity of 90 cu. yd. per hour, started operation July 17, 1942. Up to and including October 23, 1942, it mixed 43,150 cu. yd. of concrete. When operating at full capacity one man is stationed at the aggregates receiving hopper, one man does the weigh batching of aggregates under

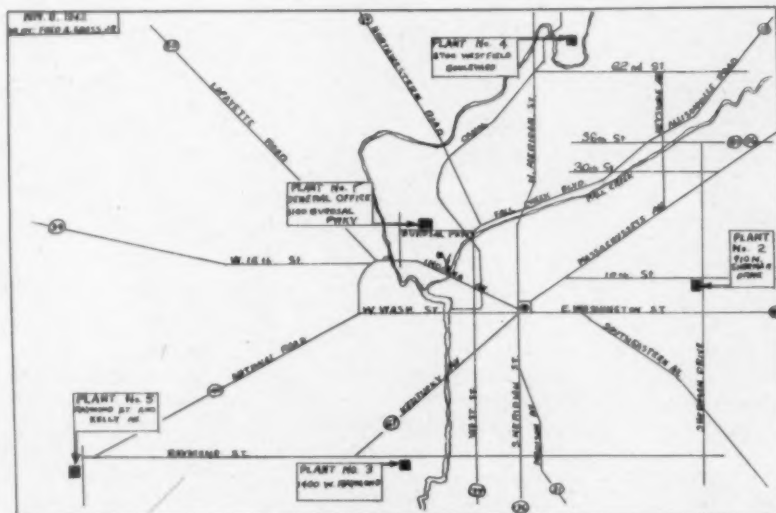
the aggregate bin, one man charges the mixer. There is also a mixer operator and one man who operates the cement handling equipment.

Shorter Haul Saves On Tires and Gas

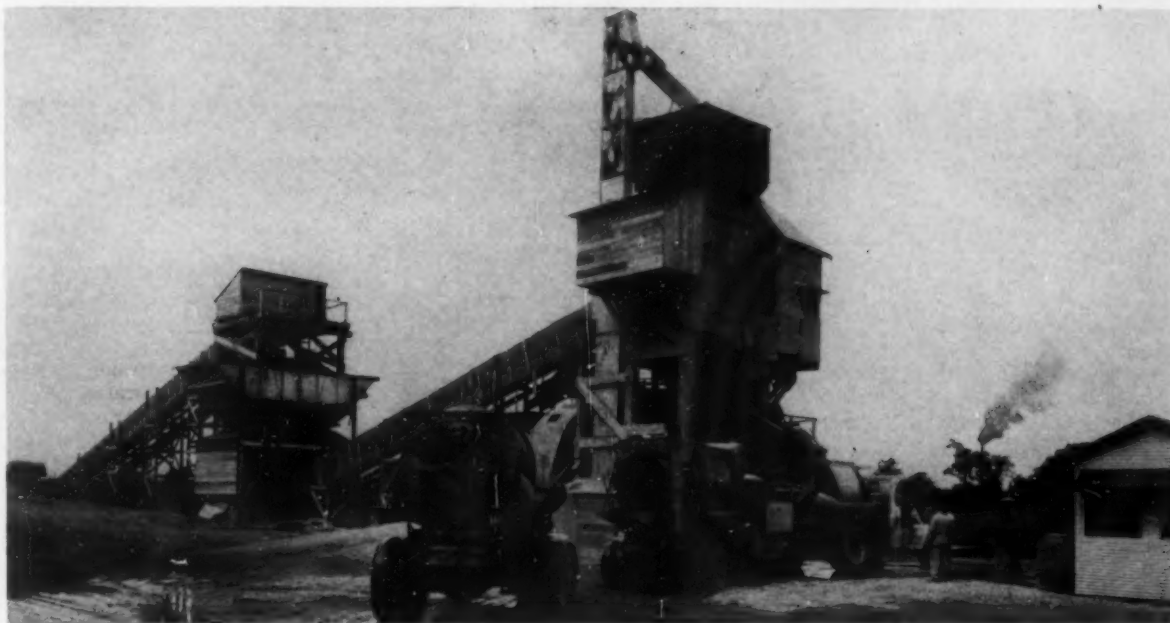
It is estimated that on the delivery of 75,000 cu. yd. of concrete, the erection of this plant adjacent to the site of the work has saved more than 100,000 truck miles over delivering from the nearest existing plant, which is three miles away.

Sand and gravel for ready mixed concrete is produced by the American Aggregates Corporation. During the present season demand has been as high as 75 cars per day for all plants. Dewatering vibrating screens reduce the moisture content of the gravel to a point where it is uniform and equivalent to 24-hr. ground storage.

All plants of the Ready Mixed Concrete Corporation are equipped to use one grade of sand and three grades of coarse aggregate. Specifications which require a maximum top size



Map of Indianapolis showing strategic location of ready mixed concrete plants to cut down truck mileage



View of Burdsal Parkway plant where the general office of the company is now located

of as much as $1\frac{1}{2}$ in. are delivered in two sizes, and specifications which demand a top size of more than $1\frac{1}{2}$ in. are delivered and used in three sizes. This makes it possible to produce a concrete of uniform, predetermined strength as all the plants are so equipped that an economically designed mix can be carried out with accuracy.

Most of the concrete during 1942 has been furnished on war contracts. In addition, thousands of yards have been supplied for the setting of machinery and plant additions, and for city street work, State highway pavements and bridges in this locality.

Business Grows Rapidly

The Ready Mixed Concrete Corporation was established in 1931 by H. A. Tutewiler, starting out with one plant located at 1100 Burdsal Parkway on the Belt line of the Indianapolis Union Railway. It was a central mixing unit consisting of a stiff leg derrick with a $1\frac{1}{2}$ -cu. yd. bucket for delivering materials into a 140-ton bin, and a 2-cu. yd. stationary mixer. A hopper, mounted on a three-beam scale, was placed under the bin and it was so arranged that it discharged directly into the mixer. The plant was also equipped with a water measuring tank, and a heating system for heating materials and water with steam. Concrete was originally delivered to the jobs in dump trucks, but this proved impractical and a few

agitators were purchased and mounted on trucks.

Business doubled during the second year and continued to increase as the years passed. In 1937 a mixing plant was erected at the plant of the American Aggregates Corporation on Raymond street and more agitator units were added to the fleet. The aggregates were batched by weight at the bins of the sand and gravel plant, and cement bins were installed in the gravel plant along with screw conveyors and an elevator necessary for delivering bulk cement from the railroad siding to these bins. The complete 2-cu. yd. batch was hauled in Ford dump trucks from the gravel plant, a distance of about 150 ft., to the hopper of the mixer. The hopper of the mixer was at an elevation of about two feet above the driveway from the gravel plant and the driveway upon which the concrete trucks were loaded was about 20 ft. below this elevation. The operation was continued with these two plants until the death of Mr. Tutewiler in the fall of 1938.

Build New Plants to Reduce Mileage

In June, 1939, the estate made an employment purchase contract with Mr. C. Gray, former chief engineer of the Indiana State Highway Commission, then district manager of operation and sales for the American Aggregates Corporation in the

State of Indiana. Mr. Gray recognized that the business was developing to the point where it was a question of investing either in additional transportation facilities, or the building of additional plants in other parts of the city to eliminate transportation. He decided that it was cheaper and more economical to build additional plants, so a modern plant was erected on the Belt Railroad at Tenth street and the Indianapolis Union Railroad.

The corporation leased for a period of 20 years, a portion of a steel trestle, from the Casady Fuel & Supply Company at this location, and erected a modern steel plant on the property. The sand and gravel is dumped by gravity from hopper cars spotted on the trestle. It is drawn on to a belt conveyor and delivered to a bucket elevator which carries it into the 300-ton steel bin of the plant. The mixer and weighing devices are installed under the steel bin. A 300-bbl. cement bin was installed immediately under the trestle into which cement is dumped direct by gravity from bulk cement cars. Cement is delivered from this auxiliary bin to a 300-bbl. compartment of the aggregates bin from which it is proportioned for delivery to the mixer. This same year a plant was erected on the North side of the city of the Broad Ripple plant of the American Aggregates Corporation.

(Continued on page 81)

Charging Induced Draft Kilns

Frequent and regular charging of shaft kilns results in uniform temperatures of exhaust gases

TODAY more than ever when one talks of winning battles, he indirectly means producing aluminum, magnesium, steel, carbide, synthetic rubber, paper, glass, essential chemicals of all sorts, and these cannot be manufactured without lime.

But for generations there was a pronounced tendency of lime plants to trail in production efficiency all other industrial plants. Most lime plants were from 25 to 50 years behind the times. Now this must change, since the lime plant today, while it may not be glamorous, it certainly is an important unit of the industrial machine.

Production efficiency does not as often as assumed come solely from plant design, but almost as much from the attitudes of those managing and operating the plants. An untrained or

By VICTOR J. AZBE*

careless fireman can do the country as much harm as an untrained or careless soldier, or even more.

From month to month we will offer something which will tend to better efficiency of lime plants and proper charging of kilns so far reaching in effect as to well justify a careful analysis.

Frequent Charging Essential With Induced Draft

Under the high production demands of today, natural draft operation of kilns is being generally supplanted by induced draft operation, as under such forced draft, kiln capacity may be increased from 50 to 300 per cent. But some have trouble at this higher

rate and others do not make the most of it, because of certain habits acquired over the years past, when operating kilns on natural draft. With natural draft open top kilns it did not matter much when stone was charged to the kilns. In the case of induced draft, however, frequent charging is essential and the more frequent it is the better.

Performance of induced draft kilns can be helped greatly and much trouble and expense avoided if the charging is regular. But regular charging to different operators may mean something quite different. No one, of course, would consider filling the kiln regularly every morning and again every evening as regular charging, but most all would consider refilling the kiln immediately after every draw as regular charging, but that is not it either.

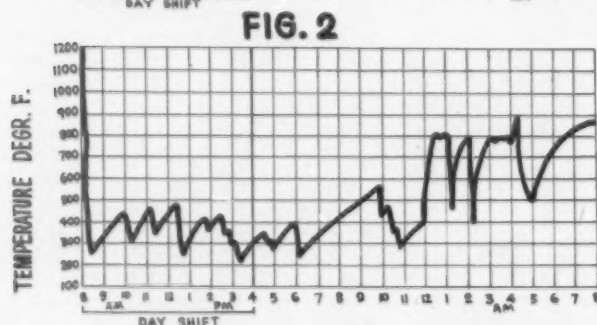
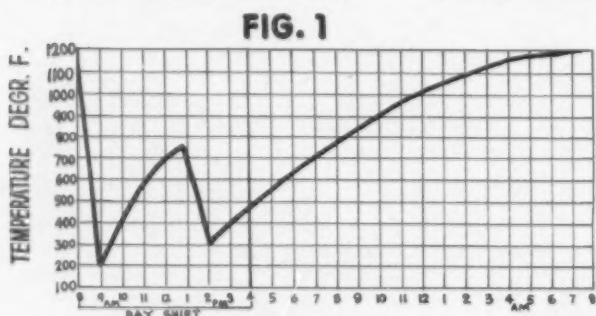
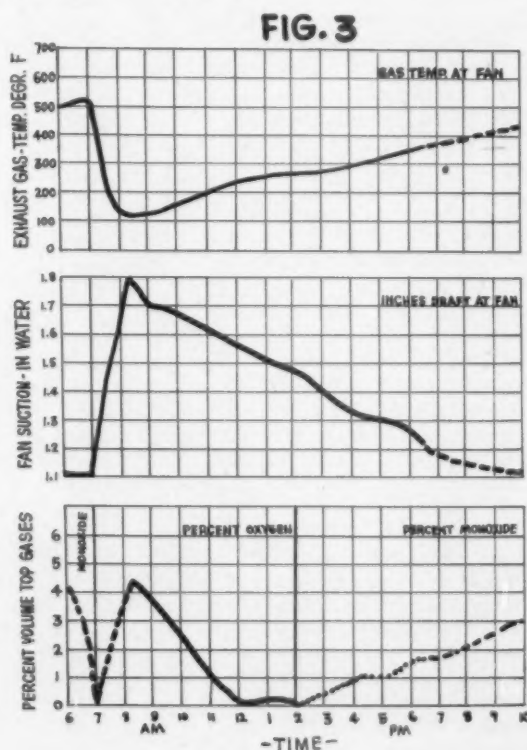


Fig. 1: Top temperature curve of shaft lime kiln fed stone twice a day, showing wide fluctuation. Fig. 2: Temperature fluctuations on induced draft kiln where some stone was put in at night, but most of it in the day time. Fig. 3: Curves showing the relationship between gas temperatures at the fan, fan suction, and waste gases



Irregular charging, which can be of many kinds, can have deleterious effects, some direct and others caused indirectly. Poor draft, low kiln capacity, high fuel consumption, damaged fans made inoperative, burned out motors, kiln trouble of many sorts, even poor lime, all can often be traced to irregular charging of stone to kilns. How serious and far reaching the effects can be almost no one seems to realize.

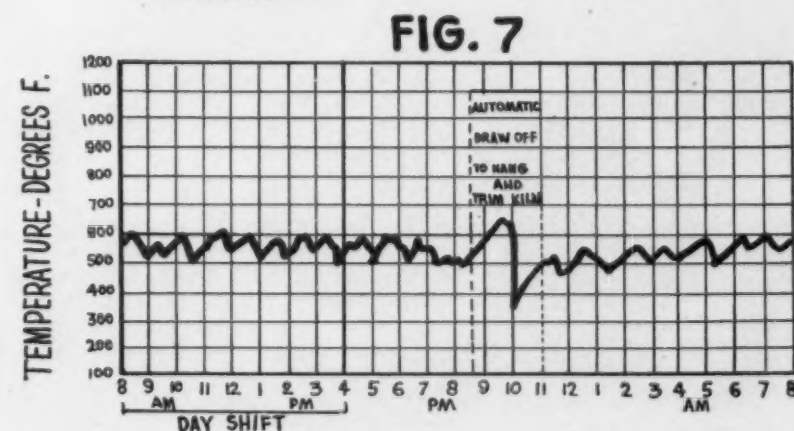
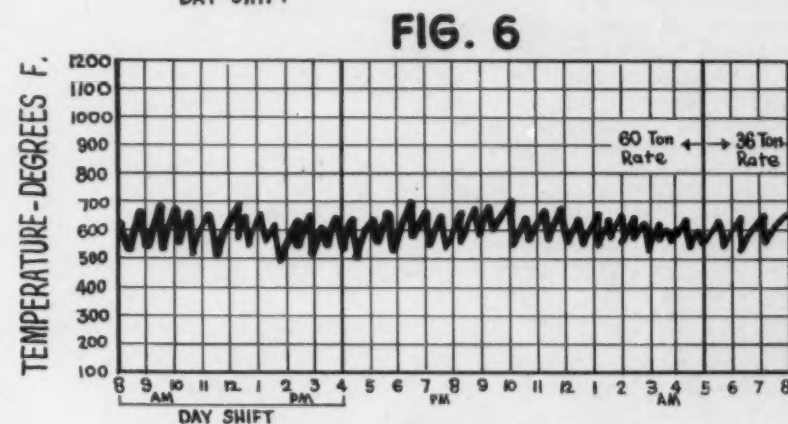
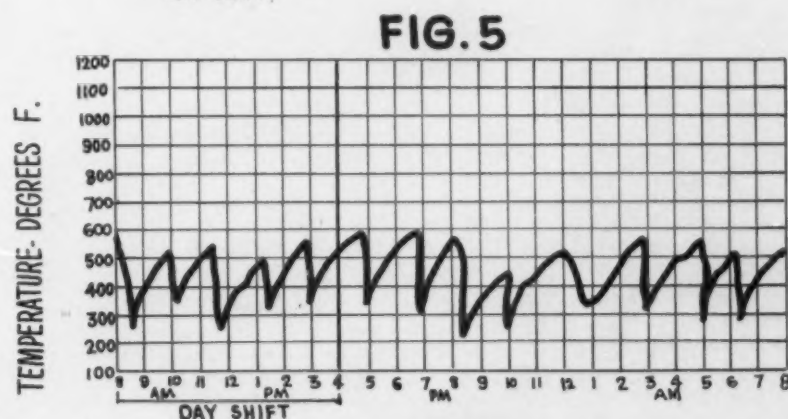
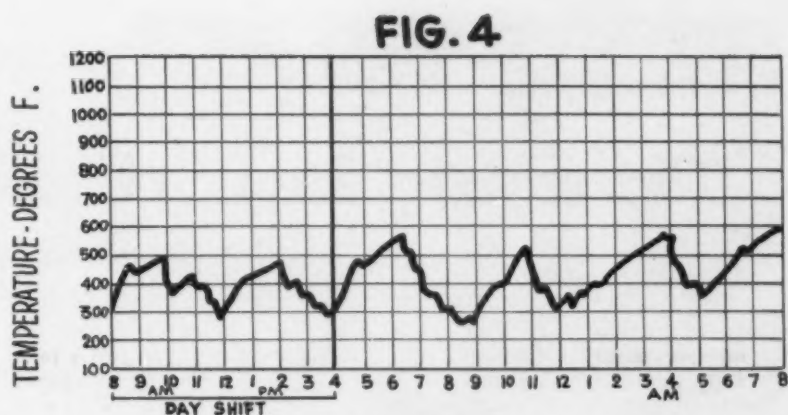
This all comes from the fact that top waste gas temperature of a lime kiln in operation is always climbing and will go out of bounds for induced draft systems, except when cooling stone is being added. Now this stone can be added a few times a day in large amounts, or very often in small amounts. In the first case, top temperature will be very high at one time and very low at another, like temperature of the kiln represented by Fig. 1, which was charged twice a day. In the second case, represented by Figs. 6 and 7, there will be some fluctuation, but not much and of no particular harm. In between these extremes there are many steps leading from bad through better.

Fig. 2 gives temperature fluctuations on an induced draft kiln, where some stone was put in at night, but most of it in the day time; as a result temperature of gases in day-time was lower than necessary and at night far too high for safe fan operation. As a result, draft in day-time was stronger than could be used, at night it was weaker than necessary for delivering the air needed to burn the required amount of gas. The result was lowering of possible capacity, and several fans were burned out due to secondary combustion. This being unburned gas coming through the kiln, mixing with the air coming in through the kiln top, igniting and passing as flame through the fan, which no fan will stand for longer than just a few minutes.

Fig. 3 gives the relationship between gas temperatures at the fan, fan suction and analyses of the waste

(Continued on page 83)

Fig. 4: Kiln exhaust temperature curve where rock cars charge after each 4-hr. draw. Fig. 5: Temperature curve of exhaust gases showing effect of superimposed bin-charging after each 2-hr. draw. Fig. 6: Rock charging equally spaced. Fig. 7: Automatic draw kiln equipped with superimposed storage zone



Magnesia In Portland Cement

Two rapid methods of determining magnesia
in portland cement adopted by A.S.T.M.

By J. L. HEITZMAN*

TWO IMPORTANT METHODS for the rapid determination of magnesia in portland cement have been developed recently both of which have been adopted as "Alternate Methods" by the American Society for Testing Materials.¹

The method whereby the magnesia is precipitated by 8-hydroxyquinoline and subsequently titrated against N/10 sodium thiosulfate may be used with equal facility in the analysis of cement-rock, limestone, quick-lime, hydrated lime, clay and similar materials.

In the author's study of the applicability of this method it was found that the sodium chloride resulting from the fusion of siliceous materials with sodium carbonate and subsequent solution in dilute hydrochloric acid does not interfere with the accuracy of the determination.

The method differs from that outlined by Redmond and Bright² and J. C. Redmond³ only in that the magnesium quinolate is precipitated in the filtrate from the calcium oxalate. This enables the analyst to continue with the solution of the sample from which the silica, ferric oxide, alumina and calcium oxide have been removed and determined and the purpose is to shorten the time required for this determination which at present with the use of the ammonium phosphate as the precipitant requires from 24 to 36 hr. whereas with the quinolate method the determination is easily completed within two hours.

Solutions Required

8-Hydroxy-quinolate (1.25% Solution).

Dissolve 25 grams of 8-hydroxy-quinolate⁴ in 60 ml. of glacial acetic acid and dilute to two liters with distilled water. 1 ml. is equivalent to 0.0016 gram MgO.

Sodium Thiosulfate (0.1 Normal)

Dissolve 25 grams of sodium thiosulfate in 200 ml. distilled water and dilute to 1 liter. Standardize against

* Vice-president, E. L. Conwell & Co., Philadelphia, Penn.

re-sublimed iodine, arsenious acid or sodium oxalate or other accurate method.⁵

Where a considerable number of determinations are made it is more convenient to make an 8 liter solution. 1 ml. of N/10 sodium thiosulfate is equivalent to 0.000504 gram MgO.

Potassium Bromate-Bromide (0.2 Normal)

Dissolve 20 grams of potassium bromate and 5.57 grams of potassium bromide in 200 ml. distilled water and dilute to 1 liter. Obtain to the sodium thiosulfate equivalent of this solution as follows:

To 200 ml. of water in a 400 ml. beaker, pipette exactly 25 ml. of the bromate-bromide solution. Add 20 ml. of concentrate HCl and 10 ml. of 25% potassium iodide solution and titrate against the N/10 sodium thiosulfate until nearly colorless. Add 2 ml. of starch solution and continue the titration to the disappearance of the blue color. Record the number of ml. of sodium thiosulfate for reference.

Potassium Iodide (25% solution)

Dissolve 125 grams of the salt in water and dilute to 500 ml.

Starch Solution

To 500 ml. of boiling water add a cold suspension of 5 grams of soluble starch in 25 ml. of water. Cool, add 50 ml. of 10% sodium hydrate solution and 15 grams of potassium iodide and shake thoroughly.

Procedure

Depending on the nature of the substance under examination it is brought into solution by fusion with sodium carbonate or solution in hydrochloric acid; ammonium chloride and hydrochloric acid or perchloric acid and the silica, ferric oxide, alumina and lime is removed and determined in the usual way.

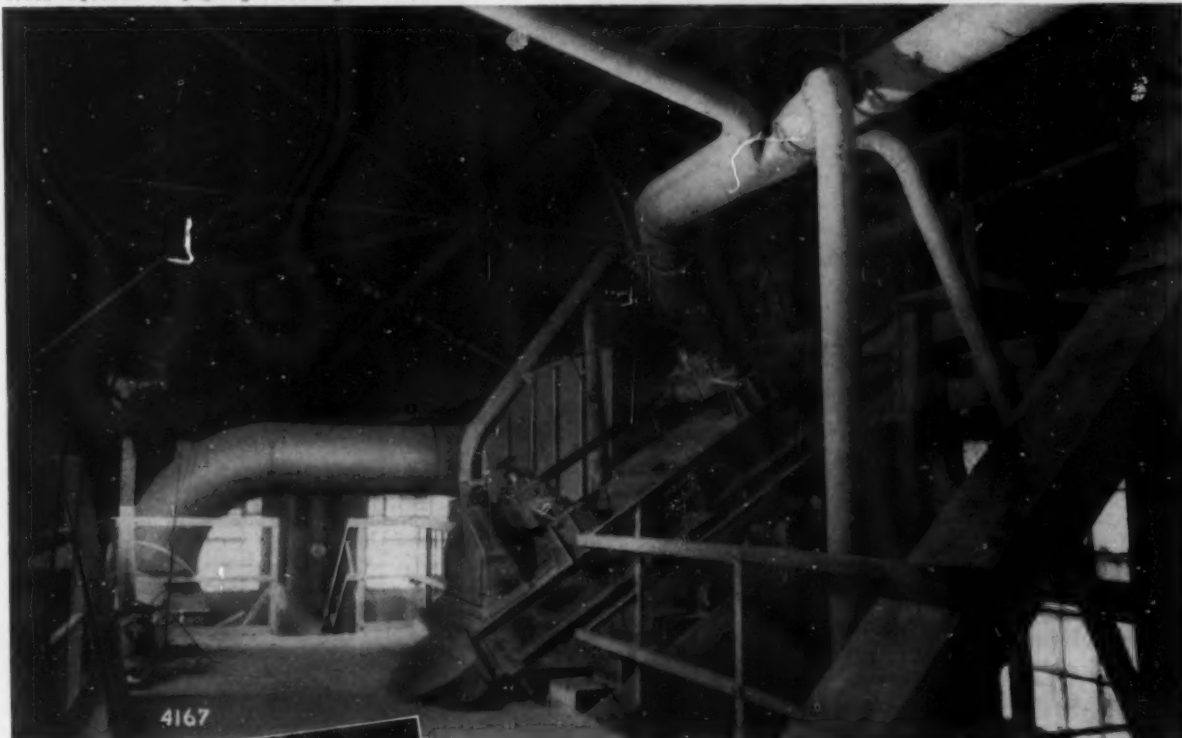
In routine work the MgO content is approximately known. In unknown samples it may be approximated by adding together the percentages of silica, ferric oxide, alumina and lime and subtracting from 100 unless the alkalies are present in appreciable amounts. In any event, the experienced analyst can fairly estimate the amount of MgO present. If the MgO is less than 5% the filtrate from the calcium oxalate is concentrated to 200-250 ml. If the MgO exceeds 5% the filtrate is cooled to room temperature and diluted to a definite volume and an aliquot portion is taken for the determination. Thus, for from 5 to 10% MgO, the filtrate may be diluted to 500 ml. and 250 ml. of this taken for the determination. Best results are obtained if the aliquot portion taken contains from 3 to 5% of MgO. With the dolomitic limestone, quick-lime or hydrated lime, the author has found that by diluting the filtrate to 500 ml. and taking an aliquot portion of 50 ml. satisfactory results were obtained.

The concentrated filtrate or aliquot portion diluted to 200-250 ml. is brought to a temperature of 70 deg. C. 20 ml. of the quinolate solution and 8 to 10 ml. (4 ml. to each 100 ml. of solution) NH_4OH is added and the solution is stirred two to three minutes with a rubber tipped glass rod. The author has found no advantage in stirring for 15 minutes on a stirring machine. Indeed, unless closely watched, stirring on a machine may result in losses.

The precipitate is allowed to settle for about 15 minutes and is then filtered and washed five times with hot dilute ammonia (25 ml. concentrated ammonia hydroxide per liter of water). The filtrate is removed and discarded and the quinolate precipitate is dissolved with about 75 ml. of hot 10% HCl. The filter paper is thoroughly washed with cold water, the solution is diluted to 200 ml. and 15 ml. of concentrate HCl is added. The solution is then cooled to room temperature. 25 ml. of bromate-

(Continued on page 82)

Note system of piping leading to Sly Dust Filter in center background — and general cleanliness of plant



● Sly Dust Filter of unit type with three small dust connections.



● "Dry Pan" with housing and exhaust connections.

● In center foreground is a Tyler-Hummer vibrating screen with dust pipe connection at lower end.

SLY DUST CONTROL

MEANS *Clean* PLANTS . . .

YIELDING GREATER PRODUCTION

These three interior views show one of the plants of a prominent manufacturer of refractories.

Our assignment was to engineer and install the filters, piping, and other accessories necessary to clean up the old plant.

How successfully this was done is evident from these views taken after installation. The plant is operating full blast and *dust is being exhausted from vibrating screens, bins, elevators, crushers, feeders, belt conveyors—a total of 22 points.* Note the absence of dust—how clean the plant is.

Write us fully about your problem. We shall be glad to analyze it and tell you exactly what can be accomplished.

THE W. W. SLY MANUFACTURING CO.

4746 TRAIN AVENUE

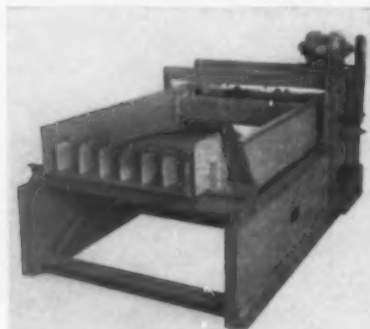
CLEVELAND, OHIO



NEW EQUIPMENT

Wet Fine Screen

NORDBERG MANUFACTURING CO., Milwaukee, Wis., has announced a "Hydro-Sizer" vibrating screen, which has been successfully used for wet



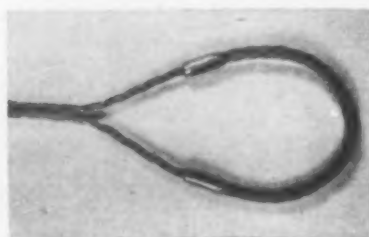
Screen equipped with 20- to 30-mesh cloth for fine wet screening

classification of pulp, sand and mud. This screen was originally developed to screen grit from the mud used in drilling oil wells, equipped with a 20- to 30-mesh wire cloth. The company itself does not know where else it may be applied, but it would appear that it could readily be used for screening cement slurry and fine sand aggregate, in place of hydraulic separators.

There has been a lot of discussion among sand producers as to how fine it is feasible to screen sand. Usually, 20-mesh has been said to be the limit. But this screen, it would appear, might be used for finer mesh sizes, since its screen surface is practically submerged in water.

Wire Rope Sling With Flat Bearing Surface

JOHN A. ROEBLING'S SONS CO., Trenton, N. J., has introduced what has been termed the "Flatweave" wire rope sling. It was developed specifically for lifting light and medium loads where the legs choke the load



Wire rope sling which may be easily passed through or under the load

or the sling comes in direct contact with the load being lifted.

The slings have a flat bearing surface which allows an even pressure on each of the six ropes which comprise the sling, thereby prolonging its useful life. It is said that as they are flat and flexible, they may be easily passed through or under the load.

Electric-Hydraulic Barrel Pumps for Lubricants

TRABON ENGINEERING CORPORATION, Cleveland, Ohio, has introduced its series H electric-hydraulic barrel pump for handling lubricants. These pumps are operated simply by plugging the extension cord into an electric outlet. It is claimed the use of a



Barrel pump for convenient handling of lubricants

non-compressible oil as a pumping agent assures the discharging of the pump's full rated capacity at all times regardless of whether the pressure head is high or low. As the pumps are fully enclosed, there is no opportunity for dirt, grit or moisture to gain entrance to the pump. The pump is self-lubricating.

The pump, complete with motor, hydraulic cylinder, etc., is mounted rigidly on a flanged head. This flange fits snugly over a standard 55-gal., 400 lb. drum permitting oil or grease to be pumped from the original shipping container without rehandling.

The pump is operated with a 1/2-hp. motor, direct-connected to the hydraulic pumping unit which is located in the bottom of the hydraulic reservoir. Oil from the hydraulic res-

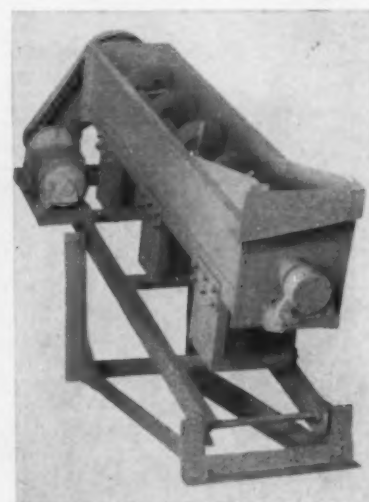
ervoir is pumped through a reversing mechanism which operates the pumping piston. This piston is double-acting. Consequently the pump discharges lubricant on both the up and down strokes, maintaining a constant, continuous discharge.

Magnetic Log Washer

STEARNS MAGNETIC MANUFACTURING CO., Milwaukee, Wis., has designed an improved type of magnetic log washer for treating fine abrasive materials in the wet state. It comprises a single ribbon type screw conveyor operating at 30 to 32 r.p.m. on a slope with adjustable frame supports over the magnetic field and driven by a gear reduction motor through well-guarded variable pitch v-belts and sheave.

Material to be treated is fed into the washer trough. Tailings are discharged at the lower end and the concentrates at the top. The magnetic flux of the coils is controlled by rheostats, offering maximum flexibility in adjusting the strength of the magnetic fields to the type of material being treated and the results desired.

These magnetic log washers can be made in various sizes, depending on the capacity desired. The log washers will operate from direct current up to 300 volts, or from motor-generator sets where direct current is not available.

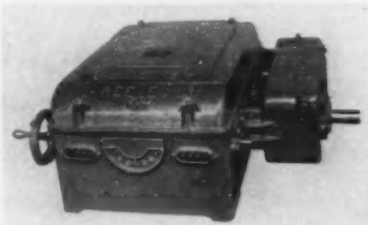


Laboratory size magnetic log washer, 12- x 72-in. The dimensions of this unit are 7 1/2 ft. overall; 25-in. wide with a maximum width of 44 in., and 4 1/2 ft. high

ROCK PRODUCTS

Variable Speed Transmission

REEVES PULLEY Co., Columbus, Ind., has announced a special enclosed design of variable speed transmission equipped with built-in chain reducer, and with the output shaft in exact



This variable speed unit is designed for vertical operation with oil drain and filler located for this position

alignment with the input shaft.

It is said that output speeds may be either increased or decreased as compared to the variable speed shaft of the transmission, and of course infinitely variable, within predetermined limits, by turning the speed control handwheel. The chain drive operates in a bath of oil.

Static Discharging V-Belts

THE B. F. GOODRICH Co., Akron, Ohio, which a short time ago introduced new lines of static-discharging and oil-resistant V-belts, has announced that these lines are now being carried in stock in all popular sizes of A, B and C cross-sections. It is said that belts made of ordinary rubber compounds are non-conductors and will accumulate a static charge until it reaches such high potential as to discharge in the form of a spark, which, in the presence of inflammable or explosive mixtures is a serious explosion and fire hazard. Approximately 20,000 volts are necessary to create a one-inch long spark in dry air, but voltages much greater than this are common where the old type belt is in operation.

Grounded metal chains and brushes are in common use with the old-type belts, and these are effective when in perfect condition. They are mechanical methods, however, and subject to wear, misadjustments and accidents, as well as the difficulty in providing proper contact with all the belts on a drive. However, the static-discharging V-belt is said to accomplish its function through the use of a rubber in the belt covers which is so compounded as to actually conduct electricity. Static charges are not built

up because the electricity flows continuously through the belt to the sheave and out through the frame of the machine.

Self-Aligning Feed Chute for Truck Mixers

THE T. L. SMITH Co., Milwaukee, Wis., is now furnishing its truck mixers and agitators with a combination feed chute and closing door support that is self-aligning. This equipment is shown in the illustration.

A uniform contact between the revolving sealing ring and mixer drum is established throughout the entire 360 deg. surface, thereby compensating for whatever misalignment that may result from the weave in the truck chassis.



No manual adjustments are required with this self-aligning feed chute

It is claimed that this design also provides a self-cleaning feature. Grout which might work past the seal cannot possibly get into the bearing surface in which the sealing ring rotates.

Clearing House for Old Equipment

BLAW-KNOX Co., Pittsburgh, Penn., has announced a national clearing house plan which will operate through its local offices and 65 distributors whereby those having old, usable equipment will be placed in touch with those desiring such equipment. It is believed the plan will serve to expedite the use of idle equipment which is needed in war work.

Saving Tire Rubber

R. G. LeTOURNEAU, INC., Peoria, Ill., announces that D. M. Burgess, vice-president and general manager of the company, has developed a method of cutting down crude rubber content of the 18 x 24 tires used on Carryall

scrapers by 25 percent or about 70 lb. of rubber per tire, including tube and flap. The newly-designed tire has the same load capacity, but the estimated working life is estimated at 20,000 hours instead of 30,000 hours for a similar size. About 1,500,000 lb. of rubber would be saved annually by using this tire design.

Emergency Alloy Steels

JOSEPH T. RYERSON & SON, INC., has placed in stock what is known as the NE (national emergency) alloy steels. These "lean" alloy steels have been established by the metallurgical staff of the War Production Board to help conserve nickel, chromium, vanadium, etc., for the duration.

A representative stock of hot rolled rounds are available in sizes from 1/2 to 7 in. in diameter and in six different analyses. Stocks will consist of six analyses: (1) carburizing alloys, NE4023 and NE8620; (2) medium hardening alloys, NE4042 and NE8744; (3) high hardening alloys, NE4047 and NE8749.

High-Lift Crane

GENERAL EXCAVATOR Co., Marion, Ohio, has improved its fully revolving crane so that it is now equipped to lift materials to unusual heights, as shown in the illustration.

This type crane is said to be particularly useful in construction work where they drive piling, excavate material and assist in erecting structures. It is not unusual to see these cranes supporting booms as long as 100 ft. The unit is mounted on a wide chassis and rubber-tired wheels, giving it stability in operating over rugged terrain.



Crane lifting section of large bin structure into place

Recovering Fine Sand For T.V.A.

(Continued from page 53)

Ohio locomotive crane with a $1\frac{1}{2}$ -cu. yd. Hayward bucket stockpiles the gravel and reloads it for shipment. In producing bank run railroad ballast, the water supply is shut off and all material, as it comes off the belt conveyor, drops directly into railroad cars through a vertical chute.

Sand Classification

Great quantities of sand and water are handled through the plant, and

accordingly, provision was made for classifying any percent of the total volume of sand and by-passing the surplus to waste far from the plant. Sand is processed through a 15-ft. diameter Wood Auto-Vortex Bowl Classifier, an automatic machine designed to recover very fine sand. Minus 50-mesh to 100-mesh sand is the fraction which the machine was installed to recover from the large volume of water, along with larger particles. It is a low-head-room ma-

chine, gravity-fed, that automatically discharges into railroad cars.

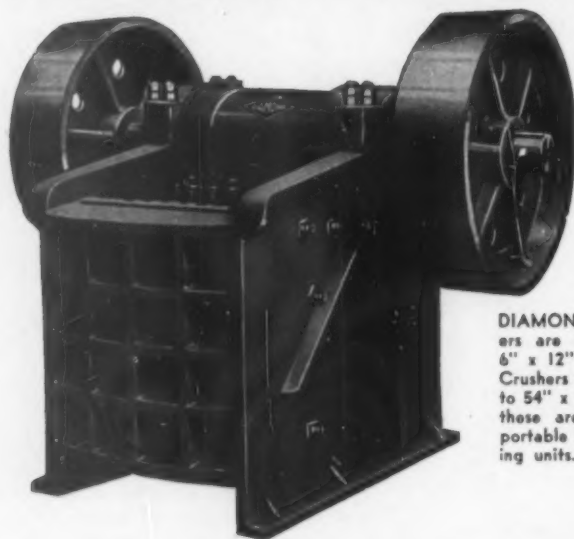
Feed enters the classifier through launders. Gates are provided in the launders to by-pass part of the total load, which with the classifier overflow around its circumference is laundered by gravity into a sump box for disposal. The disposal system is one of the most interesting parts of the plant. The box measures 12- x 20-ft. and is 12-ft. deep. All the water through the plant, fines discarded by the classifier and sand surplus find their way into it.

A 10-in. type H Amsco pump driven from a flat belt by a 150-hp. slip ring electric motor pumps the sump contents to waste, some distance from the plant into a worked-out pit. The suction pipe is horizontal and the pump is operating under no head at about 300 r.p.m., which is 50 percent of its normal turning speed for that pump when used in dredging. An operator at the rheostat control for the pump must keep the pump output about equal to the volume of water supplied the plant (2700 g.p.m.) plus discarded solids. There is a float with a gauge that he constantly watches; and a suction gauge and ammeter are guides to the percentage of solids being handled.

The end of the suction pipe inside the box has a split fitting so that water plus sand can be taken into the line from below the horizontal pipe or from above. If for some reason, sand builds up too heavy near the bottom of the box, it would have a tendency to fill the lower intake and water for dilution would automatically be pulled into the line through the top opening. Otherwise the pump could be choked and overloaded. There is an overflow pipe from the sump to waste in the event it should fill up entirely.

The only available water supply is the Alabama river which necessitates pumping the water through 1400 ft. of 8-in. line against a 240-ft. head. Because there is a dam across the river near the location, there are daily variations of several feet in the river level that made necessary floating the pumping station on pontoons. Flexible rubber hose connects to the pipe-line. The Alabama river is subject to seasonal flood stages which were also taken into consideration. Sealed stand-pipes were welded into the pipe line at several locations in the flood plain of the river, which provide for continuous operation even if the river rises 40 ft. If the river should rise to considerable degree, the pontoon-floated pumping station would be floated over to one of the stand-pipes, anchored to a tree, and

When You Buy a Crusher What Should You REALLY Buy?



DIAMOND Standard Jaw Crushers are made in 13 sizes from 6" x 12" to 24" x 36" and Roll Crushers in 6 sizes from 16" x 16" to 54" x 24", and various sizes of these are used in stationary or portable quarry plants and crushing units.

These are the things you should look for and expect in the crusher you buy:

1. A base heavy, rugged and properly reinforced to withstand the hardest crushing operations.
2. Pitman and plates (or rolls) carefully made of suitably hard material to give long and satisfactory use.
3. Proper balance for easiest running and consequent economy of power.
4. Delivery of full capacity.
5. Construction primarily based on the hardest type of crushing.

Don't buy on claims unless those claims can be thoroughly backed by performance records. And speaking of records, DIAMOND has some recent and very outstanding ones we're anxious to talk about. Either we, or any of our dealers will tell you all about it. In fact, we'd like to consult with you on any crushing, screening, conveying or elevating problem you have.

WRITE US or contact our nearest dealer
for full details of DIAMOND
ROCK, SAND AND GRAVEL EQUIPMENT. Free
bulletins on request.

DIAMOND IRON WORKS, INC.

Established 1880
AND THE MAHR MANUFACTURING CO. DIVISION
1800 NORTH SECOND ST., MINNEAPOLIS, MINNESOTA, U.S.A.

connected into the line at that point.

Connected electrical horsepower on the plant is 477½-hp., of which a 250-hp. motor drives the water pump and one of 150-hp. the waste pump. A 50-hp. motor drives the main conveyor, one of 10-hp. each vibrating screen, and the drive on the sand classifier is 7½-hp.

Total production capacity of sand and gravel around Montgomery is about 1000 t.p.h. in four plants operated by the Montgomery Gravel Co. and the Roquemore Sand and Slag Co., both subsidiaries of the Birmingham Slag Co. Recent shipments have averaged in the neighborhood of 250,000 tons a month.

Local sales are handled from bins near the downtown area, where the company has batching bins for ready-mixed concrete, central—or transit-mixed, and a modern asphaltic plant for cold and hot mixes.

C. B. Ireland is president of the Montgomery Gravel Co. and the Roquemore Gravel and Slag Co., T. F. Wallace is general manager, and E. F. Biggs is assistant general manager. Russell Haber is superintendent of the new plant, which is known as plant No. 4. Production started September 3, 1942.

Flotation

(Continued from page 67)

separators, with the coarser portion returning to the mill, and the finished cement delivered by a common screw conveyor to a bin serving a F-K cement pump.

Cement storage is composed of two groups of 15 reinforced concrete silos with eight interstice bins. The bottoms of the silos are self-cleaning steel hoppers. Under each row of hoppers a cement pump is mounted on a steel truck that can be moved on rails to receive the cement from any of the bins. Cement can be delivered into steel bins above the packing machines or it can be transferred to other storage bins.

There will be four automatic bag-filling and weighing machines. Filled bags drop onto a wire mesh belt for delivery to either side of the building for trucking into cars. For loading bulk cement there is a separate building where it is delivered directly into a car standing on a track scale. Chutes on the sides of each silo in the outside rows can be used for loading bulk cement directly into cars.

Electric power will be generated by two 6250-kva. three-phase, 60-cycle 2400-volt generators, each driven by a direct-connected steam turbine operating at 3600 r.p.m. on 250 p.s.i. pressure. To provide steam, there

are three vertical water-tube boilers operating on waste heat from the kilns and one auxiliary stoker-fired boiler.

Centrally-located electrical control boards are provided for operation of the raw and finished grinding mills, and the wiring to the switches on these boards is so interlocked that motors start in their proper sequence and automatically stop if any motor fails.

The plant is of reinforced concrete and steel construction, and will be equipped with locker rooms, wash

fountains, first-aid room and other service facilities for the employees. Several buildings are of architectural concrete, including a new office and laboratory building.

Gravel for Airport

THE HERSEY GRAVEL CO., Hersey, Mich., has installed a new triple-deck Simplicity vibrating screen to step up capacity. The plant has been exceptionally busy furnishing 75,000 cu. yd. of washed gravel for an army airport in Michigan, according to W. H. Allswede, vice-president and manager.

KEEP YOUR WASHING EQUIPMENT WORKING AT **TOP SPEED**

Specify **Eagle** Interchangeable Repair Parts

Our engineers designed Eagle Washers to withstand terrific wear. That is why:

Timken Roller Thrust Bearings are used in the housing at upper end of tub, which takes all the end thrust of a screw shaft.

Flights are made from a special iron and the metal is deeply chilled to insure long wear.

Bronze sleeves are pressed on lower end of shaft to eliminate rust accumulation and prolong shaft life.

Drive Gears and pinions are steel, cut on precision machines, to insure easy running and full power transmission.

Our engineers are ready and waiting to assist you at all times.

Our service department is anxious to furnish you with genuine Eagle Repair Parts and we will give you as prompt delivery as possible.

Eagle Products include Spiral Screw Washers, Paddle Type Log Washers, Sand Tanks, Sand Drags, Sand Dewaterers, Shale Removers, Sand and Gravel Crushers, Swintek Screen Nozzle Ladders.

EAGLE IRON WORKS

★ DES MOINES, IOWA ★



Safety Congress

(Continued from page 69)

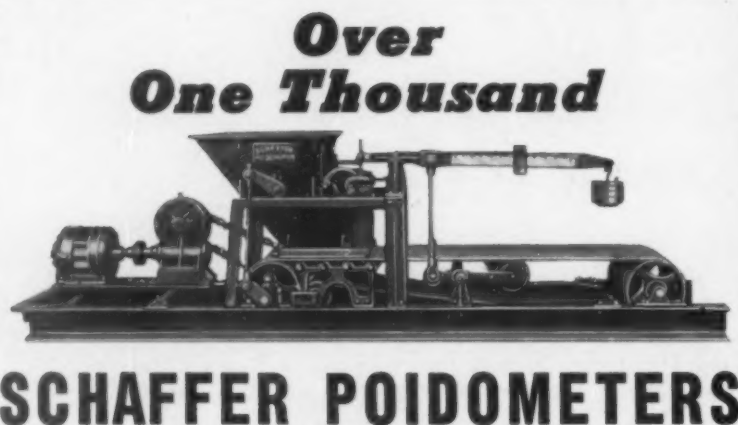
Adam, Lawrence Portland Cement Co., Northampton, Penn.; Secretary, J. R. Boyd, National Crushed Stone Association, Washington, D. C.; News Letter Editor, J. Dempster, Canada Cement Co., Ltd., Montreal, Que., Can.; Engineering Committee Chairman, J. Norvig, Pennsylvania-Dixie Cement Corp., Nazareth, Penn.; Membership Committee Chairman, F. L. Maus, Alpha Portland Cement Co., Easton, Penn.; Program Committee Chairman, L. P. Warner, Jr., Warner

Co., Philadelphia, Penn.; Publicity Committee Chairman, P. N. Bushnell, Missouri Portland Cement Co., St. Louis, Mo.; Statistics Committee Chairman, W. W. Adams, U. S. Bureau of Mines, Washington, D. C.

All of these officers served during the past year, except Mr. J. R. Boyd, who succeeds A. J. R. Curtis, assistant to general manager of the Portland Cement Association, who requested that he be relieved after sixteen years continuous service as secretary. Chairman Powell read a record of Mr. Curtis' long tenure, stating the reluctance felt by the Section in permitting

him to relinquish the secretaryship, after which a resolution was passed unanimously, expressing the thanks of the Section to Mr. Curtis for his years of work in its behalf.

The new executive committee of the Section will consist of the above officers with the addition of the following elected members at large: V. P. Ahearn, National Sand and Gravel Association, Washington, D. C.; E. D. Barry, Universal Atlas Cement Co., New York, N. Y.; H. M. Beatty, The Kelley Island Lime and Transport Co., Cleveland, Ohio; F. J. Buffington, New York Trap Rock Corp., New York, N. Y.; A. J. R. Curtis, Portland Cement Association, Chicago, Ill.; R. A. Dittmar, Universal Atlas Cement Co., Hudson, N. Y.; O. M. Graves, The General Crushed Stone Co., Easton, Penn.; H. A. Reninger, Lehigh Portland Cement Co., Allentown, Penn.; S. W. Stauffer, National Lime Association, Washington, D. C.; A. L. Worthen, The New Haven Trap Rock Co., New Haven, Conn.



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In hundreds of plants throughout the world the Schaffer Poidometer has displaced the old rule-of-thumb method of proportioning raw and finished materials.

In every instance the change has resulted in greater production, assured uniformity of product and important economy. Schaffer Poidometers are built to stand hard, continuous service. The increased tempo caused by the war emergency has further emphasized their ability to take it.

But even so, it will pay you especially during this period of high pressure production to check over your Poidometer occasionally and keep it in good condition.

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Agricultural Lime Prices

W. VERNON BRUMBAUGH, secretary, National Lime Association, has called attention of his members to the procedure for adjustment of prices on agricultural liming materials on sales to A.A.A.

A special procedure has been established for the adjustment of the maximum prices of those producers whose March selling prices were unduly low. This action, which relates only to the sales and deliveries of agricultural liming materials to the A.A.A., is contained in Amendment No. 9 to Revised Supplementary Regulation No. 4 to the General Maximum Price Regulation.

The O.P.A. recognizes that some producers who were operating under contracts with the A.A.A. have maximum prices that do not reflect current costs. The amendment opens the way for an adjustment of these prices so that they will cover the cost of production and transportation of the liming materials, and provide a reasonable margin of profit. A seller whose ceiling prices cause substantial hardship and are below the general level of last March, may apply to the O.P.A. for adjustment and, while the application is being considered, enter into a contract with the A.A.A. for the delivery of liming materials at the maximum price requested in the application. If the price requested in the application is modified or denied by O.P.A., the contract price must be revised accordingly.

The application shall be made on

Form OPA-4SR:1 as set out in Appendix A. These forms may be obtained from any field office of the O.P.A. or from any office of the A.A.A. at which bids are submitted pertaining to agricultural liming materials,

or may be copied as shown in Appendix A. An original and two copies of the application shall be filed with the local office of the A.A.A. to which the applicant's bid has been submitted.

Move Ready Mix Plant to Job

(Continued from page 71)

In 1941 the Burdsal plant was rebuilt. The 140-ton aggregates bin was replaced with a 500-ton steel bin. The old stiff leg derrick was replaced with a 220-ft. concrete tunnel, and a system of belt conveyors and elevators installed which deliver the material from the railroad cars placing it over the tunnel, with a total storage capacity of 15,000 tons. The material is carried by a 30-in. belt conveyor from the tunnel to a bucket elevator which delivers it to the proportioning bins. The material handling equipment has a capacity of about 300 tons per hour.

The addition of these plants and the modernization of the existing plants then gave the corporation a total of four plants so located that any job within the city limits of Indianapolis could be reached from one of these plants with a maximum haul not to exceed 3½ miles. It was found, however, that even with transportation cut to a minimum by these additional plants, their business had increased to the point where it was necessary to increase the fleet of trucks to where the corporation now owns and operates 31 agitator trucks.

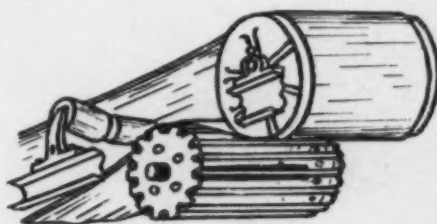
In 1941 the corporation received the contract for pouring 35,000 cu. yd. of concrete on runways and buildings at an airport. This job required such a high hourly delivery that it was considered more economical to erect a plant on the field than to transport it from one of the existing plants, so that a portable plant was erected at this project. The pavement was laid by W.P.A. labor working two 7-hour shifts. The plant poured an average of about 60 cu. yd. of concrete an hour, with an average of five agitators where it would have taken a minimum of 15 agitators to have delivered from one of the existing plants.

This work was completed early in 1942, and the plant was moved to Richmond, Ind., where it poured the concrete required for the erection of a war industry plant. The plant was erected on the site of the project and delivered the concrete directly into two 20-cu. yd. per hour concrete pumps operated by the contractor, which distributed the concrete into

the forms, thus requiring no motor vehicle transportation. This job has now been completed, and the plant moved back to Indianapolis, and is awaiting another job where its use will be economical and reduce truck transportation.

Anaconda Takes Over Basic Magnesium

ANACONDA COPPER MINING CO. has purchased the 52½ percent stock interest of Howard P. Eells, Jr., and associates in Basic Magnesium, Inc., and will operate the property. The reported consideration is \$75,000. The Defense Plant Corporation, owner of the magnesium plant, has purchased the company's ore lands near Gabbs, Nev., for \$450,000. The contract provides for Basic Magnesium to receive a fee of ½-cent a pound for the magnesium produced. This contractual relationship has not been changed.



Design Idea

This snub pulley of home-made design at an Attica, New York sand and gravel plant, prevents "gumming up" the belt with sticky, clayey material. Two 17-in. diameter chain sprockets from a worn-out sand drag were used with sections of 2-in. hollow steel, cut to pulley length. Steel tubes are welded into teeth grooves of sprockets.

Your

BELTING IS HARD TO REPLACE—MAKE IT LAST

FUNDAMENTAL CARE

Although rubber is not seriously affected by cold weather, beware of chunks of ice on the belts in freezing temperatures. Ice can be just as damaging as rock.

Always examine the system before starting a belt up in cold climates. A wet belt can freeze so firmly to the pulleys that you'll pull the cover off in trying to start the conveyor. Go along the line and lift the belt to be certain there are no frozen areas.

... Another way to conserve rubber belting is to buy Goodall Brands—Built to Last Longer.

PHILADELPHIA NEW YORK BOSTON
TRENTON PITTSBURGH CHICAGO
GOODALL RUBBER CO. OF CALIFORNIA
GOODALL RUBBER CO. OF TEXAS



GOODALL KNOWS SYNTHETICS

Ever since Synthetic Rubber was commercially introduced, Goodall has been a foremost compounder of this man-made rubber. Today, we are "batching" five of the basic synthetic rubbers for everyday production runs in our factory. When new synthetic and plastic substitutes become available, Goodall-Whitehead chemists and technicians are ready with the precise formulas, timing and control techniques so necessary for safe, dependable products.

Mill: Trenton, N. J. (Est. 1870)—72 Years of "Know-How", Our Most Valuable Commodity.

GOODALL

RUBBER COMPANY, INCORPORATED

Chemists' Corner

(Continued from page 74)

bromide solution is added and the solution is stirred and about 30 seconds are allowed for bromination. Add 10 ml. of 25% potassium iodide and titrate at once with the standard sodium thiosulfate solution. Since a 0.5 gram sample is usually taken in analysis of this nature the MgO is calculated as follows:

% MgO—200 (A-B) \times C where

A = ML. of Sodium thiosulfate solution equivalent to 25 ml. of the bromate-bromide solution.

B = ML. of sodium thiosulfate solution required for the sample.

C = Wt. in grams of MgO per ml. of the sodium thiosulfate solution.

It should be borne in mind, however, that when an aliquot portion of the filtrate was taken, the calculation must be modified to meet this contingency. For example—If a .5 gram sample of high magnesian hydrated lime was taken and the solution had been diluted to 500 ml. and a 50 ml. aliquot portion were taken, the result calculated from the above equation would then have to be multiplied by

10 since 50 ml. would represent but 0.05 gram of the sample. While it may seem that such a small amount of the sample would lead to large errors the author has not found it so. With such dilutions the author has determined the MgO content of dolomitic lime just as accurately as with the gravimetric method.

Further, the author has used the method described on co-operative cement samples 1 and 2 sent out by the Cement Reference Laboratory recently and checked the average of all co-operating laboratories within .04%.

This method is not offered to displace the standard gravimetric method. It is hoped that it may be a contribution towards rapid accurate work in routine control laboratories.

Literature and References

¹ A.S.T.M. Specification C-114-39. Chemical Analysis of Portland Cement.

² J. C. Redmond and H. A. Bright—Bureau of Standards Journal of Research, Vol. 6, 1931.

³ J. C. Redmond—Bureau of Standards Journal of Research, Vol. 10—No. 6, 1933.

⁴ Obtained from Eastman Kodak Co., Rochester, N. Y.

⁵ Analytical Chemistry—Treadwell—Hall—John Wiley & Son.

Phosphate Production

BUREAU OF MINES reports that mine production of phosphate rock in the first half of 1942 was slightly less than in the similar period of 1941. However, that sold or used in the first half of 1942 was 2,227,313 long tons, or 129,519 tons greater than in the corresponding period of 1941, and the value, \$7,672,938, was nearly a million dollars greater. Average value of phosphate rock sold or used increased from \$3.21 in the first half of 1941 to \$3.44 in the corresponding period of 1942. Producers' stocks declined slightly, but Florida was the only State showing a decrease.

Midwest Crushed Stone Producers Meet

WITH PAUL M. NAUMANN, regional vice-president presiding, 15 representatives of both members and non-members of the National Crushed Stone Association met in Chicago, Ill., on October 26. J. R. Boyd, administrative director, N.C.S.A., Washington, D. C., was present, and a large part of the meeting was devoted to his analysis of the effect of the many government rules and regulations on the crushed stone industry. Also, he answered many specific questions.

Producers present were:

Columbia Quarry Co., St. Louis, Mo.,

E. J. Krause, J. M. Mumma.

Dubuque Stone Products Co., Paul M. Nauman.

East St. Louis Stone Co., East St.

Parsons

OVAL BAG DUST ARRESTORS



SPEED

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...TOMORROW'S Competition**

More production is today's battle cry and that's exactly what you get when Parsons Oval Bag Dust Arrestors appear on the job. In every single instance where Parsons Oval bag dust arrestors have been installed, production has immediately been stepped up. Not only that, they afford remarkable protection for employees, equipment and plants. Tomorrow's competition will demand not only speed but economy and efficiency. In hundreds of plants throughout the world Parsons Oval Bag arrestors have been in operation for years, not costing a cent but actually paying for themselves and producing profits. Send for free catalog.

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Louis, Ill., M. E. McLean, W. E. Hewitt.

Lehigh Stone Co., Kankakee, Ill., W. R. Sanborn, Dan Sanborn, S. A. Shunk.

Linnwood Stone Products Co., Dav-enport, Ia., Chas S. Carlson, R. S. Quelle.

Meshberger Bros. Stone Co., Linn Grove, Ind., A. R. Hopkins, Claude Monce.

Monon Crushed Stone Co., Monon, Ind., Grace Evans, Geo. H. Balfe, Wm. B. Neuman.

Lime Forum

(Continued from page 73)

gases. When kiln is charged with cold stone, temperature at the fan drops and so fan is capable of handling a greater weight of gas, which gives a higher kiln draft. This high draft induces more air to pass through the kiln, more than necessary, so the analyses indicated excess oxygen.

As the stone warms up, waste gas temperature rises, and as it climbs, fan capacity reduces and draft drops, which, in turn, reduces the amount of air passing up the kiln.

Danger of Burning Out Fans

For a while this improves the conditions, as shown by the dropping oxygen content, until a point is reached when temperature is so high, that fan capacity is so low, it is not able to induce enough air for complete combustion of the combustible gas. Fig. 3 shows this plainly, oxygen disappears and carbon monoxide appears. As conditions get worse there is more and more carbon monoxide until a point is reached when ignition takes place in the top and the fan burns out.

Of course there is much one can do to avoid this; at first one can regulate the draft, and later one can regulate the gas, and that is where understanding of operation and personnel efficiency come in. It is best to arrange it so that draft will not vary and therefore will not need to be regulated and the kiln will be able to take the full quota of gas at all times. It is only then that the maximum of kiln capacity and the minimum of operating confusion will be attained.

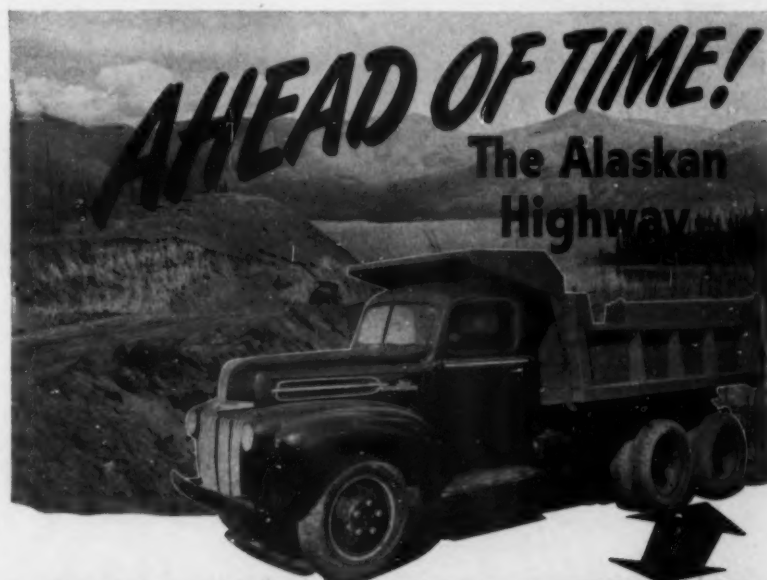
Equalization of top temperatures can only be accomplished by frequent and regular charging. Fig. 4 represents a kiln which is drawn every four hours and recharged by stone cars immediately thereafter. The conditions are far better than those in Figs. 1 and 2, but still not good enough.

Fig. 5 represents a kiln drawn every two hours and charged immediately from the superimposed storage zone which is continuous and above to the active kiln shaft. This for many reasons is better than charging method of Fig. 4, one of which is that there is a surety the kiln will get its stone after every draw and everything will be satisfactory, if fan selected was for the high volume of highest temperature, except that draft will have to be continuously regulated.

Fig. 6 represents an operating improvement on kiln of Fig. 4. Instead of dumping in all of the stone, that is,

refilling the kiln immediately after each draw, thus keeping it full all the time, the charging of the total numbers of cars for the day is spaced equally into number of minutes in the day.

The ideal condition, of course, is a superimposed storage zone directly over the active kiln equipped with automatic draw. In this case, the lime that falls out every minute is replaced by fresh stone the same minute. Fig. 7 represents such a kiln. Theoretically it should have a straight temperature line which, due to small local hangs, was not attained.

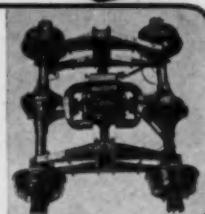


AMERICA'S LIFE LINE TO THE NORTH IS OPEN!—

Operating months ahead of even the stiff schedule set up by Army engineers!

A tough assignment in rough country calling for husky, durable, efficient equipment — and right on the job is a big fleet of trucks with

Put TWO driving axles under the load instead of one, double the gear speeds, improve springing and load flotation, gain vastly superior tractive ability.



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By means of THORNTON installations these trucks have been converted from 1½ to 2-ton vehicles into heavy-duty, four-rear-wheel drive trucks handling 6-yard dump bodies.

Standard heavy-duty trucks are not available today—but here is the answer to that problem. You can convert new or used 1½ to 3-ton trucks

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Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL

"When you need TRACTION you need THORNTON"

Canada "Freezes" All Business

By KENNETH R. WILSON

Ottawa Correspondent

PROPHETIC of what may be expected to happen sooner or later in the United States, was the recent order by Canada's Price Ceiling Czar, Donald Gordon, which "froze" all business in this country "for the duration."

Under the new order which became effective November 2, the creation of new business outlets, the stocking of

new lines of goods not already handled and removal to larger premises were placed under strict control. The order applies to all manufacturers, wholesalers and retailers and to ten specified types of services. It also prohibits any firm from extending its operations into any other classification.

Behind this drastic new control

measure lies the need for conserving materials and releasing manpower for war industry and the armed forces. As outlined in this letter last month, Price Czar Donald Gordon has recently been given the added responsibility for putting Canadians on "iron rations" for the duration of the war. It is his new job to see that provision of goods and services for civilian use is systematically reduced to the bare minimum required for "health, efficiency and morale."

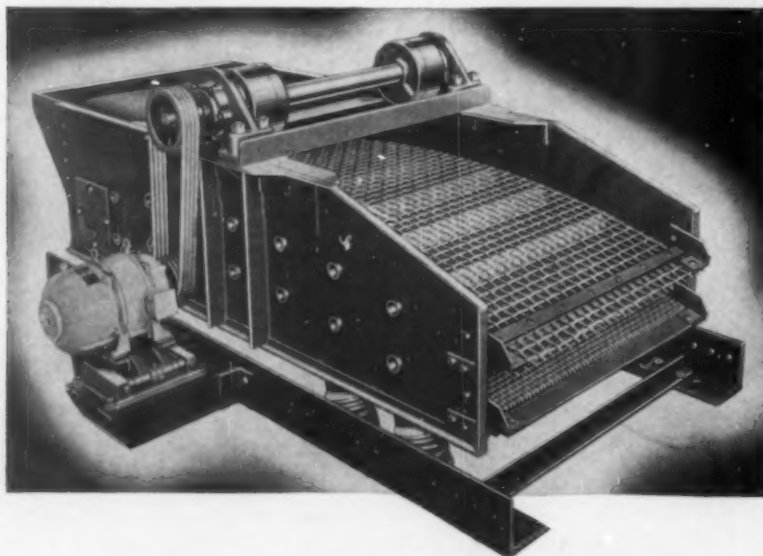
In addition to the new freezing order, Donald Gordon has also issued a preliminary statement of policy to indicate more precisely what this curtailment program means to business operations in Canada. Of special interest and importance is the stress laid on the fact that the program will be "orderly and progressive" and that there will be no wholesale reduction or curtailment of civilian industry unless or until manpower machinery is ready and prepared to absorb or channel the workers so released, directly into war industry.

In this regard the different way in which the gold mining industry has been handled in Canada and in the United States is highly significant. The U. S. order decreed that all gold-producing mines should be closed down as of a certain date (barring subsequent appeal for exemption). The Canadian policy has been to draw up detailed blueprints of the manpower in the industry and transfer men from the mines in accordance with that blueprint, if as and when that manpower can be effectively absorbed into war industry.

On the basis of recent experience, Canada feels that unless great care is exercised there will be a considerable wastage of manpower by summary closure as in the United States.

There has been a lot of interest here in the recent announcement from Secretary Henry Morgenthau that a new three-point program would be inaugurated in the United States at the end of November. First aim of the program is reported as being a huge nationwide borrowing plan "taken to the people by a vast volunteer army of financiers, advertising men and salesmen, spear-headed by a small group of paid workers and administrators."

That is the sort of program which Canada has operated now for more than a year and a half. Only a few weeks ago Canadians put over their third nationwide Victory Loan campaign. It was participated in by nearly two million individual subscribers. The government asked for a minimum subscription of \$750 millions and obtained at least \$975 millions (final



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Day after day, over the widest range of operating conditions, Deister PLATO Vibrating Screens are proving their ability to continuously handle increased tonnage . . . accurately graded . . . without interruption of the work cycle for costly repairs or replacements.

Because of the unusually high speed of the vibrating mechanism and the rapid conveying action, oversize moves off quickly . . . thick beds cannot accumulate . . . distribution of aggregate is uniform . . . and these characteristics combined with PLATO's exceptionally flat screening angle means exceptionally

large capacity . . . rapid, accurate grading.

Rugged, all steel welded construction, positive screen cloth tension, only two bearings, neither of which support the weight of the screens, extra heavy supporting springs . . . are but a few of the reasons why Deister PLATO Vibrating Screens are the choice of leading aggregate producers . . . why close to 50 per cent of PLATO sales are "repeat orders." Most models are still available for prompt delivery, too. **DEISTER MACHINE COMPANY, Fort Wayne, Indiana.**



figures will not be available until some time in December).

Apart from the obvious purpose of raising money to help pay the cost of war, Canada looks on these campaigns as doing two very vital things:

1. The stimulation of national and industrial morale.

2. The giving of invaluable support to price, wage and other wartime control measures.

In this last Victory Loan campaign in Canada, special labor-management committees were set up in every key plant, factory and business institution across the country. In many cases the employees handled the entire campaign themselves. They organized their own mass meeting, handled their own canvassing arrangements, etc. One big talking point was the fact that these bonds can be purchased on a payroll deduction plan. For every \$100 bond the employer deducts about \$17 a month over the next six months. Average subscription under this payroll plan is expected to run about \$90 for each worker. It is expected that nearly a million of Canada's three million urban workers will have subscribed when final returns are available.

Looking back over the results of the three-week campaign, there is country-wide enthusiasm for what has been achieved in bringing labor and management closer together and in giving a tremendous "lift" to productive effort and national and community morale.

Midwest Agstone Meeting

OFFICERS and members of the Midwest Agricultural Limestone Institute held a meeting at the Palmer House, Chicago, Ill., on October 26. This meeting was called to check into the possibilities of action on three vital matters discussed at the Springfield, Ill., meeting on September 18.

President E. J. Krause presented the topics for discussion. Harry Clark, treasurer, read correspondence Secretary J. R. Bent had with AAA officials as Mr. Bent could not be present due to illness.

Considerable discussion developed on the question of "Price Ceilings" for agricultural limestone. It was the consensus of opinion that little relief could be obtained in securing higher prices although costs had risen very appreciably due to higher labor and material costs. A recent ruling of the Office of Defense Transportation at the instance of the Department of Agriculture indicated that truckers hauling agricultural limestone would be able to secure a higher priority rating for tires and gasoline. An

effort also is to be made to extend the time limit on the 1942 AAA liming project to permit farmers who could not secure deliveries due to difficulties in getting haulers to come under the 1942 program.

Acquires Portable Plant

RAY SCHIEF, Ann Arbor, Mich., recently acquired a Diamond portable screening and crushing plant having a capacity of 80 cu. yd. per hour. He has also installed a 21-cu. yd. steel bin, a delivery conveyor, 50-ft. centers; and a feed conveyor, 60-ft. centers.

Dredge Water Rights Suit

KIRKLAND SAND AND GRAVEL CO., and the Cedar River Gravel Co., have been sued by the commissioners of Commercial Waterway District No. 2 of Renton, Wash., requesting the Superior Court of King County to void a contract entered into with the companies about a year ago. The waterway district is asking for an injunction against the gravel companies to prevent them from claiming rights under the contract or from attempting to sell any more of the gravel of the district.



COLMONOY SAVES VITAL METALS

The Pug Knives shown above tell a graphic story of the unusual wear resisting qualities of COLMONOY hard-surfacing alloys and overlay metals.

1. New, 25 lb. pug knife, made of high alloy steel.
- 2 and 3. Same type, after only 3 months of service. Worn beyond efficient operation, with loss of over half of blade material.
- 4 and 5. Same type. Each blade coated with 1½ lbs. of COLMONOY No. 6. In constant use for over a year, and still operating efficiently.

COLMONOY alloys are playing a vital part in the Rock Products industry. Use them on parts subject to great wear—drag buckets, dipper teeth, hand shovels, conveyor screws, gudgeons, pulverizing hammers, clinker plows and other parts that have tough going.

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Handling Explosives

One Can't Know Too Much About Avoiding Accidents

By E. L. THAYER*

ALL OF YOU are aware that commercial explosives are necessary for the economical production of most of the basic materials that are so vital to our national progress.

Every pound of this must be transported from the factory to the point of use either by railway or truck. Statistics show that since 1926, there have been no deaths or personal injuries connected with the rail transportation of dynamite or black powder in either the United States or Canada.

You can be sure that a record like this is due to strict observance of carefully-drawn regulations, and it is concrete evidence that explosives can be handled safely. It is, of course, the desire of every consumer of explosives to achieve a similar excellent safety record. To accomplish this it is necessary to provide suitable rules governing the handling of explosives under all conditions existing in your various operations. In most cases these rules are already in existence. The safety posters and other publications issued by the National Safety Council and the various explosives companies, the pamphlets from the Institute of Makers of Explosives, the almost too familiar case inserts placed in each case of dynamite or caps setting forth the famous 53 "Don'ts" regarding safety in the handling and use of explosives, the state and local laws covering in detail the location and construction of all types of magazines, the force of inspectors whose duty it is to see that these laws are obeyed, the printed safety rules posted in all magazines and those drawn up by the larger stone producers, these are all readily available to help you to use these convenient forms of concentrated energy with safety. Yet we still have accidents with explosives. Why?

The Institute of Makers of Explosives attempts to tabulate all explosives accidents each year. In the last three years, they listed an average of 93 accidents per year which caused

63 deaths and 115 personal injuries annually. In 73 percent of the cases, the true cause was determined. Carelessness and premature shots (usually a form of carelessness) head the list with 22 percent, while improper use and returning too soon account for 10 percent. Children playing with caps caused 21 percent, which stresses the importance of educating them to leave these attractive objects alone. Actually these cap accidents should come under the heading of carelessness, as they are nearly always caused by some adult carelessly leaving caps where the youngsters can find them. Thus, at least half and probably three-quarters of the accidents with explosives are due to some form of carelessness. This fault may be due to the "familiarity that breeds contempt," to ignorance or to bravado. Whatever the cause, management must combat it by selection and education of the blasting personnel and by showing active interest in safety. It is almost axiomatic that if the "big boss" is really interested in safety, the operation will have a good safety record.

Explosives Are Made To Explode

The manufacturers are doing their utmost to build uniformity and dependability into their products so that their action under a given set of conditions may be predicted. Dynamites are complex mixtures of nitroglycerin, oxidizing salts, absorbents, and fillers. All of these ingredients, as well as the finished product, are subject to rigid chemical control during all phases of manufacture. This insures that the various components are uniformly within specifications and that successive batches of the same grade are uniform in properties. Chemical research has enabled the manufacturers to replace substantial percentages of sensitive expensive nitroglycerin with the much safer and more economical ammonium nitrate. The resulting dynamites are much safer to handle than those of twenty years ago and yet they perform the same work just as effectively, and effi-

ciently at a lower cost. Research toward safer commercial explosives has not stopped, and we are certain to see further improvements in the years to come. However, we must never forget that explosives are manufactured for one purpose only, and that is to explode.

The consumer must prepare for the safe handling of explosives before they arrive on his property. Properly located and constructed magazines must be provided, and, of course, blasting caps and dynamite must not be stored together. In fact, these two materials should be kept apart just as long as possible. Care should be exercised in transferring the explosives from the freight car or the manufacturer's truck to the consumer's magazine. The boxes should be lifted and carried, not thrown, and should be piled carefully in neat piles. Arrangements should be made to insure that old stocks are used first, as dynamite may deteriorate on storage. Of course, no one should be allowed to open cases of dynamite in a magazine, and good housekeeping both in and around the magazines is so important and customary that further comment is unnecessary.

The manufacturers of explosives and the railroads have strict rules regarding the condition of equipment used for the transportation of dynamite. It is only logical that the customer should transport dynamite between his magazine and the shot in trucks which are in good repair. The steering gear and the brakes should be in good working order, and they should not have leaky gas lines or loose or exposed live wires. We do not recommend that caps be carried on the same load with dynamite.

Smoking or carrying matches within a distance of 150 ft. of a magazine or a shot should be prohibited, and this rule should be rigidly enforced. An occasional recess may be granted during the loading of a shot so that the men may withdraw from the shot area and enjoy a smoke.

The men who handle explosives should be picked for their intelligence

* Engineer, Technical Division, Explosives Dept., E. I. du Pont de Nemours and Co.

† From a paper read at Cement and Quarry Section meeting, National Safety Congress.



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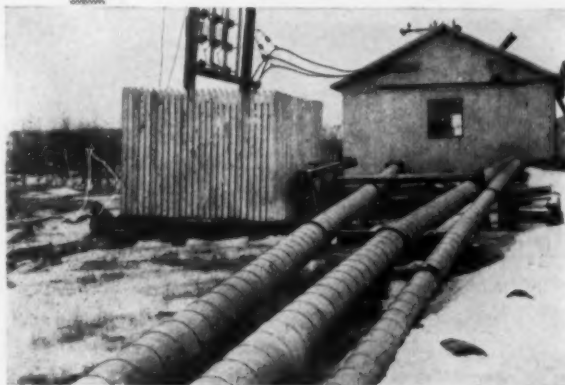
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NAYLOR LOCKSEAM **PIPE**
SPIRALWELD

Handling Explosives

(Continued on page 86)

and good sense. They should be fully conversant with the safety rules and the characteristics of explosives, what is safe to do with them, and what is dangerous. New men should be continually trained by the older experienced workmen and no one should be allowed to handle explosives until he has been thoroughly instructed. Anyone who displays a tendency toward carelessness or recklessness should be removed from the crew immediately.

The number of men engaged in any blasting operation should be held to a minimum consistent with efficiency. This requires systematizing the work so that each man has definite duties. All persons not necessary for the successful loading of the shot should be kept away from it. This applies to curious visitors as well as idle workmen.

The management should designate some competent person to be in charge of all blasting operations, and this person should be given sufficient authority to make sure that his instructions will be obeyed. He should

be authorized to order any employee from the scene of a blasting operation if this individual insists on following unsafe practices or is under the influence of liquor or narcotics. It should be his responsibility to keep an accurate account of all pertinent data in reference to the loading of the shot. This will include the depth of holes, the amount of explosives in each charge, and the position of the decks and the points at which stemming starts in each hole. His records should also show any unusual circumstances connected with the loading such as the location of an obstruction in the hole.



THIS grizzly game of war calls for big loads . . . moved fast, economically, with no time out for "weak-sister" equipment. This time it's "for keeps."

If that's the kind of haulage you're shooting for in the battle for war production, find out what Plymouth Gasoline and Diesel Locomotives can do for you.

Rugged power and speed have made Plymouth the buy-word for years among peace-time producers of rock products. Those same characteristics make it the password to efficient haulage in the front lines of war production.

We are all-out for Victory. If you are on a similar schedule, perhaps we can be of assistance.

**PLYMOUTH GASOLINE and DIESEL
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Division of The Fate-Roet-Heath Co. PLYMOUTH, OHIO, U. S. A.

Preliminary Details Are Important

It is recommended that the work of figuring the charge per hole, and wherever possible, the bailing of holes and the distribution of stemming, be done before the explosive is delivered to the shot. This will reduce the man exposure hours and allow the foreman to give full time to the supervision of the loading operations.

The foreman should insist that all electric cables be removed from the shot area before loading is started. No one should be allowed on the quarry floor in front of the proposed blast during the loading operation. If a blast consists of a combination of well-drill holes and snake holes, the snake holes should be completely loaded before starting to load the well drill holes.

When dynamite is delivered to the location of the shot, the cases should be placed carefully on the ground in neat piles at designated points. These piles should be arranged so that if one of the holes being loaded should explode prematurely, the explosion is not likely to propagate to the piles on the top of the ground. We suggest that the main piles of explosives be located at least 150 ft. back from the row of holes. The unopened cases should be carried to an opening station not closer than 25 to 50 ft. from the line of holes, this distance to depend upon the charge per hole. For instance, if the charge is less than 200 pounds, 25 ft. should be satisfactory. However, regardless of the load, we recommend that the supply at the opening station never exceed 400 pounds, and that the opening stations be located at least 50 ft. apart. Hard wood or non-metallic tools such as wedges and mallets should be furnished and no one allowed to open wooden cases except with these implements. If fibreboard containers are used, they should be opened with the

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usual patent cutters or slitters which are designed for this purpose, and which may be obtained at any hardware or ten-cent store.

As a further precaution, toward minimizing the damage from the premature explosion of a hole during loading we suggest that the loading crews be separated by as much distance as practical and never less than 35 ft. Suppose you are loading an eight-hole shot with two loading crews and the spacing between holes is 15 ft. One crew should start at hole No. 1 and the other at hole No.

5, and both work in the same direction. In this case the two crews should remain 45 to 60 ft. apart without difficulty.

The opened cases should be carried to a point about 6 ft. from the hole at such a rate that not over two cases are at the hole at any one time.

Care in Use of Exploding Devices

If electric blasting caps are to be used for priming the holes, they should not be piled with the dynamite, but should be located about half-way between the opening piles.

They should be kept in the original cartons until needed and the foreman of the loading crew should be responsible for their distribution. We recommend the placing of two caps in the main charge and one in each deck. The caps in any hole containing two or more charges separated by stemming should be connected in series.

When Primacord is used, the line should be cut from the spool as soon as the primed cartridge has been properly seated and the spool should be taken to the next hole to be loaded. The end coming from the hole should be drawn taut and securely fastened at one side where it will neither interfere with loading nor come in contact with the dynamite on top of the ground.

If the holes are unusually rough or ragged, the Primacord or electric blasting cap should be placed in the first cartridge to go into the hole. Then, if the hole becomes blocked with a rock during loading, there is an excellent chance of detonating the bottom load, which would otherwise probably remain unexploded in the wall. The danger of such unexploded charges to personnel and equipment cannot be over-emphasized.

When the holes contain water, the cartridges should be lowered until they build up above the water level, after which it is satisfactory to drop them, provided the holes are reasonably smooth. If the holes are rough so that there is danger of hanging the cartridges up before they reach bottom, or of blocking the holes by dislodging rocks from the side, time will be saved by lowering the entire load.

Tamping the Charge

A tamping block on the end of a rope is sometimes necessary for tamping explosives in well drill holes. The block should be of hard wood to resist wear and weighted with a non-sparking metal so that it will sink in water. It should not have any exposed metal parts, or be too heavy for ordinary everyday use. It is operated by lowering into the hole until it rests on the dynamite, then raising it a foot or two and letting it drop.

Wagon-drill and snake holes of course require that the cartridge be split and tamped. Wooden tamping poles with no exposed metal parts should be used and the ends should be cut off squarely in order to work efficiently. It is recommended that that dynamite be split at or near the hole as it is needed. This will pre-

(Continued on page 92)



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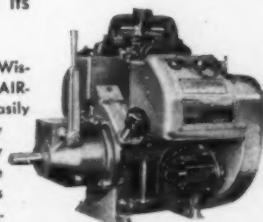
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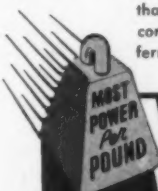
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STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE

Handling Explosives

(Continued from page 90)

vent scattering the dynamite over a large area of ground or the possibility of slitting too much so that it must be sent back to the magazine where it may absorb moisture and become insensitive.

In the interests of safety, whenever possible, dynamite should be loaded in the wrappers as received from the manufacturer. This can usually be done if sufficient thought is given to the relationship between the diameter of the hole and the diameter of the cartridge before the order is

placed. This does not of course refer to the free-running type of dynamite which is designed to be poured into the holes. If the holes are so rough that they will probably be lost through the loading of cartridges as manufactured, it is of course necessary to shuck the dynamite. This requires the exercise of care to prevent dynamite being scattered around the collar of the hole. When the condition of the holes makes it necessary to cut gelatin into small pieces in order to prevent blocking the hole, the operation should be done with a sharpened wooden paddle in an empty dynamite box in order to prevent mixing grit with the dynamite.



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Right: A 5'x12' Model D double deck *Simplicity* gyrating screen.

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Handling Explosives in Blocked Holes

Sometimes, in spite of all these precautions, holes will become blocked, and the treatment of those holes often presents a definite hazard. The use of the usual tamping dolly may merely pack the obstruction tighter and pave the way for more violent and more dangerous measures.

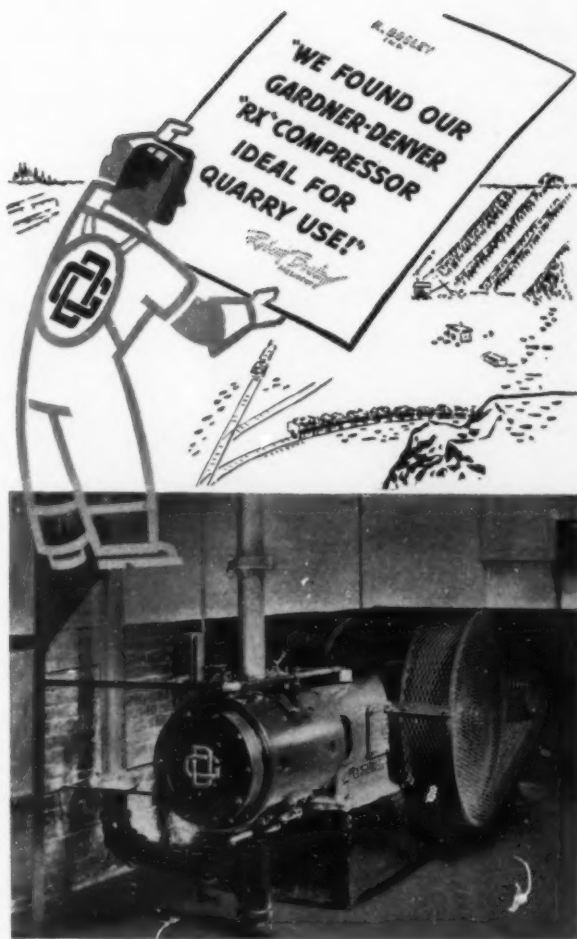
A much more satisfactory block for freeing a plug of dynamite may be made from a 10-ft. piece of 2 x 4. The lower 4 ft. should be cut down to 2 x 2 or smaller and the bottom 4 in. made into a sharp point. I have used such a block many times and have found it to be very effective.

It should be lowered into the hole until it rests on the stuck cartridge and then moved carefully up and down. In most cases it will break up the cartridge so that it may be dislodged by the shoulder of the block. Always use extreme care in this operation. It is advisable to pour some water down the hole before starting to dislodge a cartridge and at intervals during the operation. Never put any metal implement or even a wooden tamping block tipped with metal into a bore hole containing explosive. When surface conditions permit, heavy tamping blocks in deep holes may be operated through a tripod erected over the hole. This will make it unnecessary for the men operating it to stand directly over the hole.

When tamping blocks are being used, no explosives should be allowed on the surface within 10 ft. of the hole. On removal from the holes, tamping blocks should be rested on box lining paper or in empty dynamite cases to prevent gravel and grit being introduced into the hole. Do not operate a tamping block too vigorously as this may injure the Primacord or electric blasting cap wires.

If the hole has become blocked with a rock after loading has started, it will usually be wiser to make no attempt to free the rock because of the hazard of friction between rock and dynamite. If the hole is not completely blocked off it may be possible to continue loading by shucking the dynamite and pouring it down the space between the rock and the side of the bore hole. Otherwise it will be necessary to continue loading on top of the rock if there is sufficient room, or to stop loading this hole and depend upon the charges in the adjacent holes to pull the burden. Every precaution must be taken to make

(Continued on page 94)



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Handling Explosives

(Continued from page 92)

sure that the Primacord or electric blasting cap wires are still intact.

It occasionally happens that the hazard of dislodging a stuck cartridge of dynamite is so great that it should not be attempted. This case should be treated as just described.

Precautions After Loading Holes

If a thunderstorm threatens while holes are being loaded, connected, or fired, the operation should be stopped at once as there is danger that lightning may strike the explosive directly

or may discharge electricity to detonator wires and thus set off one or more of the primed charges. Everyone should leave the shot as soon as possible. The time to ward off accident from a thunderstorm is when the first threat of storm is observed. Furthermore, it should be realized that an approaching storm frequently creates as much electrical disturbance as one in progress.

After loading, the holes should be completely filled with stemming material, preferably sand or clean crusher screenings. Ordinarily, it is not necessary to use a tamping block to set-

tle the stemming in well drill holes, as it will be sufficiently compacted by the action of shoveling it down the hole and by its own weight. Small diameter poles may be used to prevent bridging of the stemming material in wagon drill and small well-drilled holes. Care must be observed both during the loading and tamping operations to avoid damaging either the Primacord or the cap wires. It is recommended that they be protected by a covering of box lining paper or fibreboard at the collar of the hole.

Regardless of the method used for firing a blast, no attempt should be made to connect up until excess dynamite, boxes, tamping blocks, and so forth have been removed and all persons not needed for the actual operation of connecting sent off the shot. This will eliminate the possibility of a careless person tripping over and breaking some of the connections.

Electric Wiring Hazards Avoided By Careful Checking

Before starting to hook up a shot primed with electric blasting cap, the foreman should make certain that the firing switch on the powerline is locked in the off position, and that the lead lines are disconnected from the blasting machine or other source of power and are short-circuited. The work of making the connections should proceed in a logical and orderly manner so that it will not be necessary for the men to walk over the finished connections. One easy way of assuring this condition is to begin hooking up at the end of the shot farthest removed from the source of power. Series connections should be checked with a properly constructed circuit tester (blasting galvanometer) before connecting to the lead wires, or in the case of parallel series circuits, before connecting to the bus wires. Before attaching the lead lines to the shot, the foreman should send all workmen off the shot, approve all connections, check the lead line with a blasting galvanometer, and make sure that it is short-circuited on the power end. Care should be taken to use an adequate length of lead wire to insure that the man firing the blast will be in a safe place.

Electric blasting caps should be fired with a blasting machine or by means of a positive double pole switch. Shooting with makeshift contacts or with dry cells should not be permitted.

Primacord shots may be detonated by either fuse and cap or electric blasting caps. If the shot is to be

(Continued on page 113)

Nature makes the Rules for DUST COLLECTION



Toricellian Vacuum...1643

NORBLO Equipment

Gives You Practical Permanent Solutions

In NORBLO Dust Collection equipment there is no super-ingenuity attempting to outwit Nature with gadgets. The NORBLO Hydraulic has no internal moving parts or complications. Frequently it is used with a NORBLO Cyclone. The combination gives you highest over-all dust collection efficiency from smoke or fume, with less water use and less sludge to be handled from the hydraulic unit.

You gain by this practical engineering. The adaptation of natural principles and varied equipment to the specific situations in each industry served, insures ultimate low cost and immediate high efficiency.

Write for new catalog of NORBLO Exhaust Fans—just off the press.

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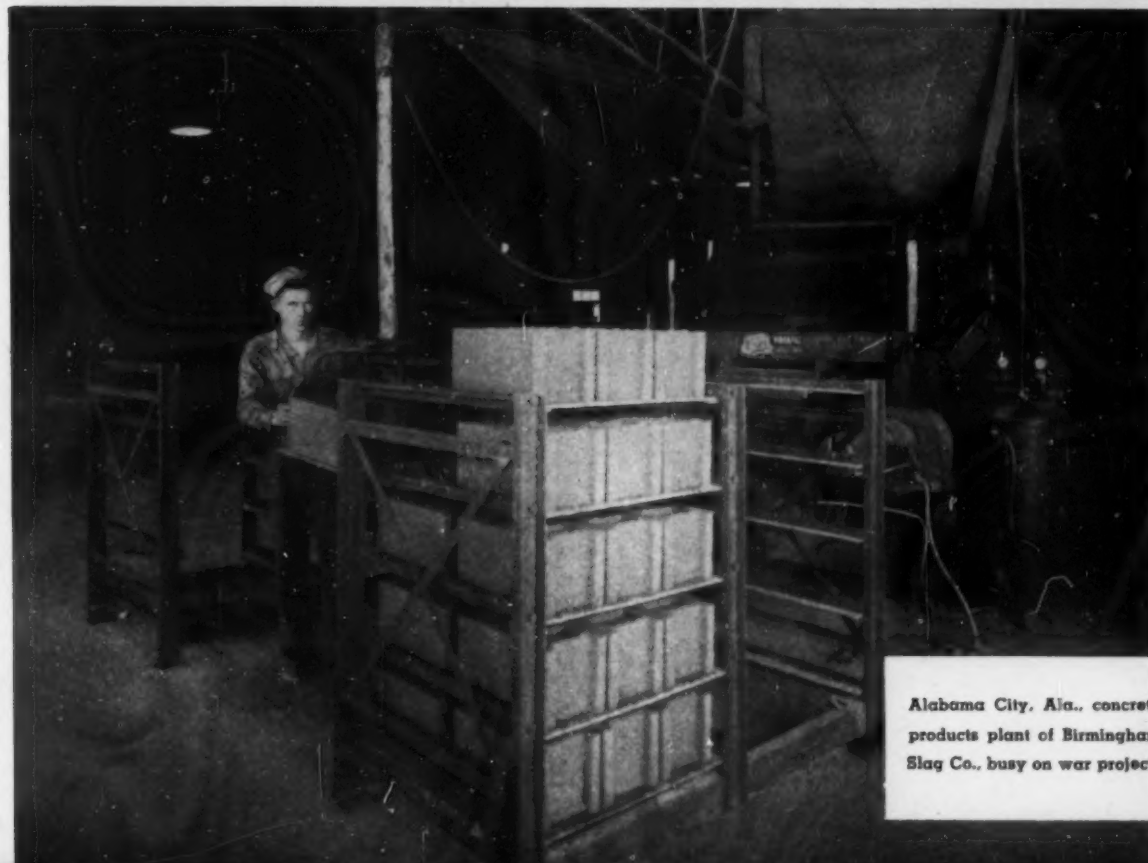
DUST COLLECTION

THE NORTHERN BLOWER COMPANY

6409 BARBERTON AVENUE • CLEVELAND, OHIO

CONCRETE PRODUCTS AND CEMENT PRODUCTS

Speeding Up **BLOCK PRODUCTION**



Alabama City, Ala., concrete products plant of Birmingham Slag Co., busy on war project

Slag Aggregates for Concrete Block

Concrete products plants of Birmingham Slag Co. supply large war projects in several states with rail and truck haul

ARM Y AND WAR PLANT construction continues unabated in the Southeast, and a large volume of concrete masonry units has been in demand all through 1942. One of manage-



Officials of concrete products plants. To the left, F. M. Kerby, superintendent of the Alabama City plant, to the right, A. E. Lloyd, manager of the company

ment's main responsibilities has been to produce for this type of work and to render the service which it requires.

Birmingham Slag Co., Birmingham, Ala., with concrete products plants at Ensley, suburb of Birmingham, and at Alabama City, Ala., is one of the most active. Both plants were designed for a high rate of production, sometime before war was declared, and as a result of this being so prepared the company has been delivering to several large war projects. The company has had to turn from merchandising and servicing relatively small jobs, in large numbers, to higher production methods for the larger jobs. From Ensley, concrete units are being shipped by rail into several of the adjoining states, up to a distance of 250 to 300 miles or more from the plant. At Alabama City, construction locally has been active with the result that deliveries from that plant have been confined to truck-hauling.

By BROR NORDBERG

Both plants, Ensley and Alabama City, are located near to blast furnace slag processing plants and the products at each place are made from basic slag aggregates. Together, the plants have a daily capacity ranging upwards from 10,000 8-in. standard units depending on whether a single or multiple shift is in operation.

Both plants have the same general design and layout. Each is Besser equipped, with a Vibrapac machine and a 50 c. f. concrete mixer. All handling, of racks and units, is done by industrial power trucks operating on concrete floors in the plant and concrete runways in the stockpiling areas. Each is a bulk cement plant, with overhead aggregates bins and a gravity feed from the mixer into the block machine. Each machine can manufacture 10 standard 8- x 8- x 16-in. units per minute.

Until the plant at Ensley was rebuilt, it had tamping machines and was laid out for industrial track

hauling into the kilns and out to the stockpiling area. This plant has a four-compartment 150-cu. yd. aggregates bin. Graded slag is delivered to the plant in standard railroad cars, and is dumped into a hopper which feeds the bucket elevator delivering to the bins. Bulk cement from cars, is fed into the same elevator by a cross screw conveyor. The mixes are proportioned by weight.

As this article is written, this plant has been in continuous operation for some time and is turning out 5000 units in each of two shifts daily. It is of interest that over half of the production is shipped by rail, in box cars. The bulk was formerly sold in the Birmingham area, and was delivered by trucks. Such truck delivery is still used for all units delivered within a radius of 75 to 100 miles.

Trucks Speed Up Plant and Shipping Operations

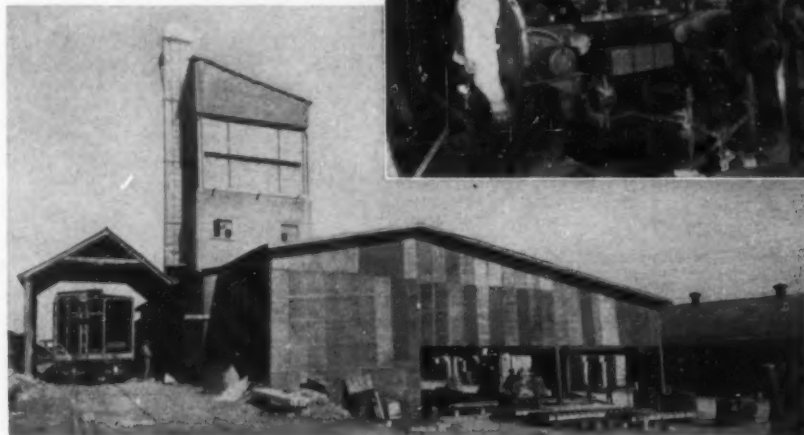
The plant is laid out compactly, in order to synchronize the operation of the lift truck with the block machine. Both are operated to full capacity during the time of plant oper-



Power truck handling load of block to cars at Alabama City plant. All handling of racks and units is done with this machine

ation. Curing capacity is 6000 units in four kilns which are just a few steps from the machine. The operator of the lift truck, a 5000-lb. gasoline-powered Clark Utilitrac, has a regular routine of operations. He takes a

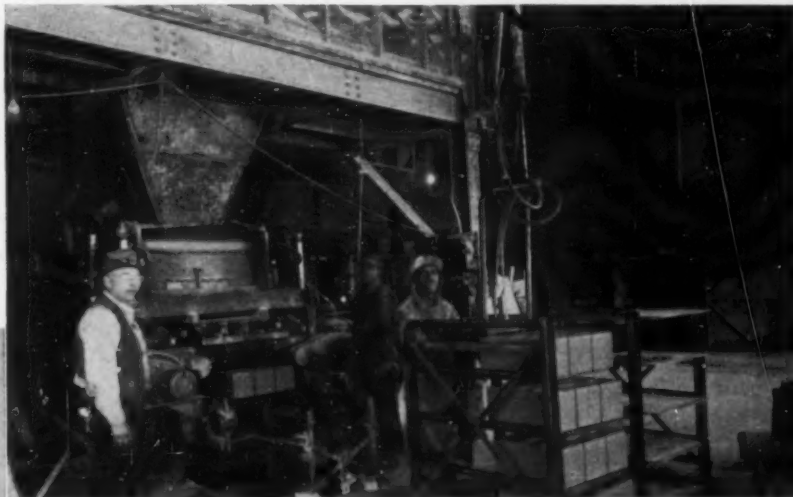
Below: Block plant at Ensley, Ala., which has been on a 24-hour schedule. Slag aggregate comes in on cars at the left, and finished block are shipped out in box cars to the right



rackful of units from the machine into the kilns, then takes a rack of cured units out of the kilns for stockpiling, and then brings an empty rack to the machine. This cycle keeps the lift truck busy all the time. Gasoline consumption is only six to eight gallons for a full shift's operation, during which there is very little standby time. Both the lift truck at Ensley and the one at Alabama City are of the fork type so that they can take a "square" of units from stockpile and raise it to truck loading level.

At Ensley there are unusual facilities for shipping concrete units by rail. Cars can be loaded either on a high level siding from racks or trucks or on a low level siding where box car floors are flush with the ground level. Since the recent car capacity ruling, box cars are loaded with as many as nine tiers high. A typical car of 80,000 lb. rated capacity will be loaded with 2600 or 2700 3-core 8- x 8- x 16-in. units piled eight or nine high. A slag unit of the type being shipped for pier and foundation work in Army camps, weighs about 32 lb.

Most of the cars loaded are spotted on the low level siding and the blocks are placed at the car doors by the Utilitrac. Each unit is piled by



Above: High production block machine with pneumatic off-bearer in action. Mixer is overhead, spillage from machine being returned through hopper below floor to elevator

hand inside the car. There is considerable demand for fractional units, principally halves, and 30,000 to 40,000 such units were cut within the last year. A Clipper masonry saw with an electric-powered carborundum cutting wheel was set up near the rail siding for the purpose. Units are cut by two quick passages under the cutting wheel, ready for immediate loading.

Also Make Lintels, Sills and Joists

Seven men are required to man the production unit at the Ensley plant, including the driver of the power lift truck. Yard men are extra. In addition to various shapes and sizes of standard units, this plant can pro-

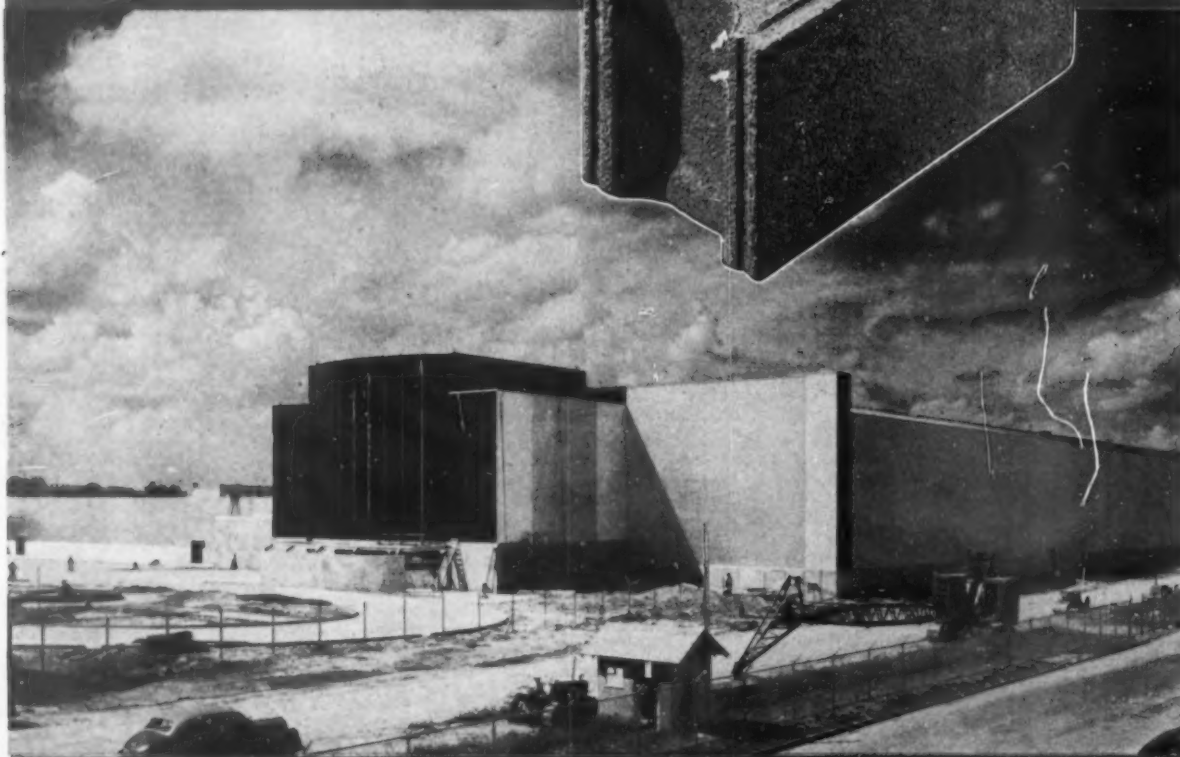
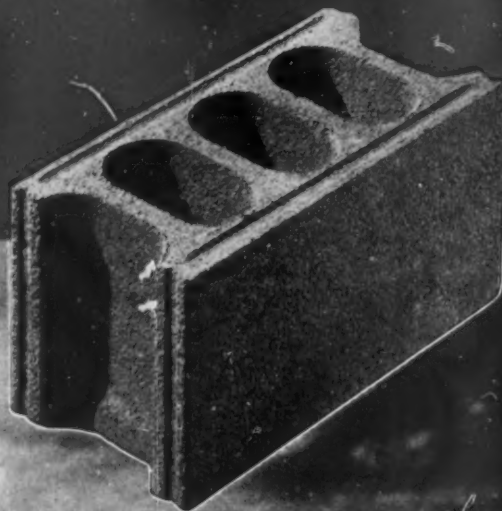
duce about 100,000 concrete brick in a full day's operation of two shifts, and is also making poured lintels, sills and joists for some of the war contracts. Before the war emergency, the plant had been equipped with No. 19 Kennedy gearless gyratory crusher, belt-conveyor fed from a track hopper, to crush other aggregates. From the crusher, a belt conveyor was provided, to convey these aggregates into the main plant elevator. The plant is equipped to do all repair welding on the machinery and equipment.

A. E. Lloyd, manager of the Ensley and Alabama City plants, was formerly associated with the Portland cement Association in the South and had operated a concrete products business of his own before establishment of the present plant operations now



Attractive concrete masonry office located on main highway through Birmingham, Ala.

Cinder Concrete Products, Inc., furnished 200,000 Stearns Vibrated Cinder Blocks for this Bomber Plant. All block walls are exposed and painted.



EAGLES' NEST

From this mammoth incubator, brood upon brood of war birds wing their way to the fighting fronts to drop their destructive eggs on the enemy.

Stearns-equipped concrete block

plants in every state are supplying blocks for such war plants, while here in Adrian the Stearns factory has been converted 100% to the production of war machine parts that cannot be described to you.



STEARNS

MANUFACTURING CO. - ADRIAN, MICH.

GENE OLSEN, PRESIDENT

We are still able to supply from stock, for necessary construction work, Stearns Vibration and Tamp Type Block and Brick Machines, Mixers and Skip Loaders. Let us know your needs.

managed by him. Up to the time when production began to overshadow merchandising in conducting a concrete masonry business for war, concrete masonry had gained considerable momentum in a territory where other types of masonry construction had always dominated before. Present activities, in merchandising, are directed toward selling concrete masonry to contractors holding war contracts and "delivering the goods." A. R. Bright is superintendent at Ensley.

At Alabama City, the plant is an entirely new one and engaged in producing units for use in the immediate vicinity. Layout of the plant is almost the same as at Ensley and the same methods are used to deliver minus 1/4-in. slag to the plant from the company's nearby slag processing plant. Much of the production now is of 8- x 8- x 12-in. units, made at the rate of 13 a minute for piers and foundation walls.

There are four curing kilns that have a capacity of 56 racks holding sixty 8-in. units each. Curing here, as at Ensley, is done with low pressure steam. The principal difference in equipment at the two plants is that a gasoline-powered fork-lift Towmotor handles all the racks; and the concrete units from the machine to the kilns and to the trucks for loading. F. M. Kerby, superintendent, was formerly in charge of operations at the Ensley plant.

In addition to the two plants located in Alabama, the company has a third plant at Stockbridge, Georgia, adjacent to Atlanta. It is similar to the others but is set up to utilize crushed granite for aggregate.

Concrete Burial Vaults Without Reinforcing

SOME INTERESTING TESTS have been carried out by the Research department of Wilbert W. Haase Co., Inc., on concrete burial vaults made without reinforcing which seem to indicate that if they are properly designed and of good concrete will prove satisfactory for handling, transportation and performance in use. These tests should be of great value to all concrete vault manufacturers who are seeking to comply safely with WPB Limitation Order No. L-64. The tests were made by the Washington Testing Laboratory, Washington, D. C., at the plant of Washington Wilbert Vault Works, Inc., Rockville, Md.

Two regular size Wilbert type vaults were made, using no reinforcing of

any sort, except four handles in the covers and four short handle anchor rods, providing a handle anchored to a rod imbedded in the concrete in each corner of the covers. No handles were provided in the vaults. Later four more vaults were made under normal manufacturing conditions and curing. Sand and gravel aggregates and Type 1 cement were used. After the usual handling and transportation, the vaults were loaded to 600 lb. per square foot. After a period of one hour, no cracks were visible. Additional load was then applied and the vault loaded to destruction. Failure occurred at 1,170 lb. per square foot.

Builds Second Ready Mix Concrete Plant In Detroit

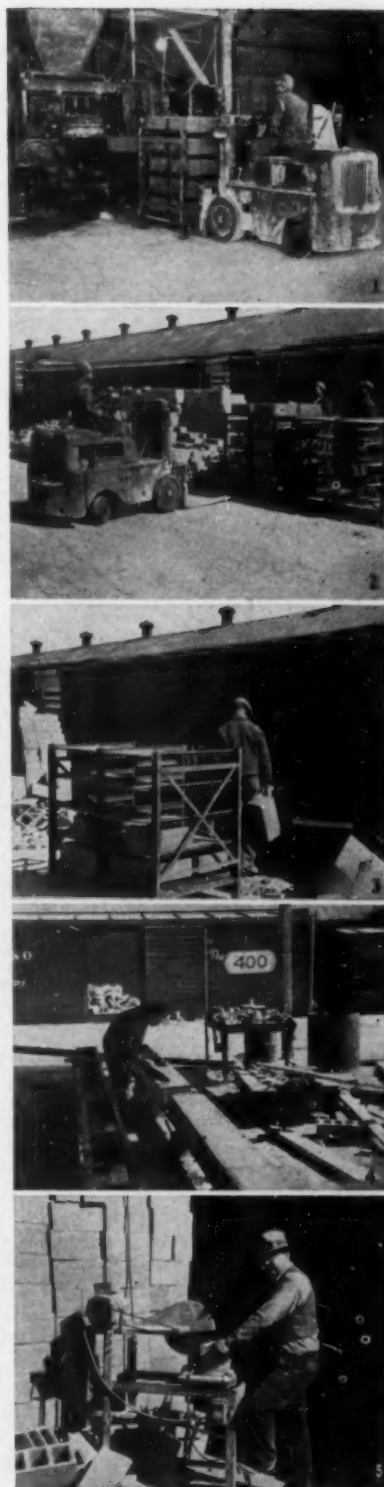
THE THOMAS E. CURRIE CO., Detroit, Mich., has set up a second ready mixed concrete plant to handle the heavy demand for concrete in this busy war production area. This new plant is located at the intersection of Wayne and Ecourse Roads west of the city. Over 20,000 cu. yd. of concrete are being furnished for the construction of 14 bridge structures on the new express highway, connecting a bomber plant with the City of Detroit. An additional 20,000 cu. yd. will be furnished in the construction of the Wayne housing project of 1150 home units, and the Inkster housing project of 550 units. Two new 4-cu. yd. Jaeger mixers were recently added to the fleet and all 16 mixer trucks are working at full capacity.

California Pipe Plant

AMERICAN PIPE AND CONSTRUCTION Co. expects to start operations at a new concrete pipe plant at Cajon, Calif., about December 15, with a force of nearly 100 men, according to B. J. Primmer, San Diego district manager. The plant will manufacture pipe for a pipe line at El Monte and another from Murray dam to the Lakeside pipe line pump station. The company also will lay the pipe. Thomas Wilcox is in charge of plant construction, and when it is completed Charles Mead will supervise manufacture and laying of the pipe.

Buys Mixer Trucks

THE TRANSIT MIX CONCRETE CO., Detroit, Mich., recently added to its fleet two new 4-cu. yd. Jaeger mixer trucks and four used Jaeger mixer trucks.



Views of activities at the Ensley plant. 1—Taking a load of block from the machine to the curing kilns. 2—Truck delivering load to box car entrance. 3—Loading block into cars. 4—Making lintels and sills near railroad platform. 5—Mr. Bright, superintendent of the Ensley plant, demonstrating the sawing of concrete block

Gearing Plant For War Business

Cinder Concrete Products, Inc., increases capacity with new block machine, and improves method of handling aggregates and cured products

CONCRETE BLOCK manufacturers going after war business run smack up against two hard facts when they bid for these jobs. Each bidder must

steam railroads which assures uniformity of quality. Yard storage capacity for cinders is about 200 cars.

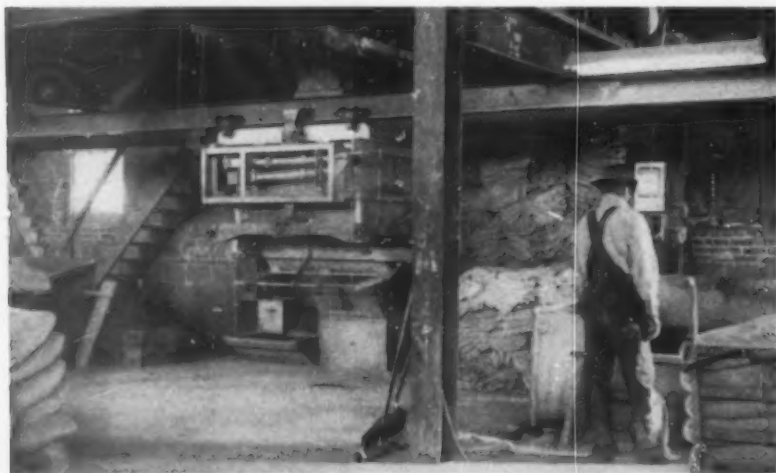
To stockpile the cinders and re-

in the company shops, and an elevating mechanism for raising the "dozer" was assembled on the tractor, using a Ford rear-end, rod, and hand wheel for the driver to actuate a chain hoist. Cinders are pushed from the stockpile by the tractor equipped with bulldozer to a hopper over a chain-operated, 18-in. Link-Belt pan conveyor that carries the cinders to a hopper in the plant.

This hopper is over a roll crusher with 43- and 46-in. rolls set to reduce cinders to minus $\frac{1}{2}$ -in. Crusher throughs go to a short belt conveyor which dumps into the boot of a bucket elevator, 60-ft. centers, and thence into a rotary screen which makes a separation at minus $\frac{3}{8}$ -in. Throughs go into bin storage on the top floor and oversize is returned by chute to the rolls.

Manufacturing Operations

Directly below the cinder storage bins is the mixing floor. There are two 28-cu. ft. Stearns mixers located above the two Stearns Joltcrete machines. Cinders are accurately weighed out from the bins into a lorry equipped with a Howe scale. The



Aggregates are weighed out in traveling hopper and transported to either of two mixers

guarantee deliveries of large quantities of units which must meet prescribed strength tests. It is difficult for the small producer or one poorly equipped to meet these requirements.

Cinder Concrete Products, Inc., Denver, Colo., was fortunate in having sufficient equipment and experience to assure contractors that deliveries of tested products would be made on time to government and war industry jobs. Two Stearns Joltcrete type machines were available, one of which was a new No. 9 type and the other, one of the first Stearns No. 9 Joltcretes brought out several years ago. Both machines have a production of 3700 to 3900 8- x 8- x 16-in. units or equivalent in an 8-hr. shift, including clean-up time.

The plant is ideally arranged for straight-line production methods, and for convenience and economy in handling materials. Cinders are received by rail on a siding alongside the plant on a fill which rises about 15 ft. above the ground floor. Practically all cinders come from the

claim them for processing in the plant, the company uses a Model M Allis-Chalmers tractor equipped with a bulldozer. The bulldozer was made



One of two vibrating type block machines. Fluorescent lighting throughout plant

JAEGER Motorized

CONCRETE PLANTS MEET YOUR PROBLEMS



LABOR SCARCITY IN DESERT — 8 "HIGH DUMP" 4 Yd. Units Averaged Over 120 Cu. Yds. Hourly of Minus 1" Slump Mix on California Bomber Range.

*Most of the
TRUCK MIXERS
now speeding
war work are
JAEGER*



HIGH PRODUCTION: 95,000 Yds. for Ford Bomber Plant @ 2000 Yds. per 16 Hours—with 10 Jaeger "LOW CHARGE" 4 Yd. Units.



PLACING PROBLEMS: 40 Mobile 3 Yd. Jaegers Poured 1200 Igloos at Anniston, Ala.

CONTINUOUS POURS: 2065 Yds. in 31 Hours at Seattle Army Warehouse with Mixed Fleet of Ten 4 Yd. Units as Shown Here.

YOU OWE IT TO YOURSELF TO KNOW why more concrete is being mixed and placed by Jaeger Truck Mixers. Agitators than by any other method — why Jaegers produce higher strength, more workable concrete and bigger daily yardage, at lowest operating and maintenance cost. **SEND FOR COMPLETE CATALOG AND DATA — TODAY!**

• Only JAEGER Offers a Type for Every Need

"HIGH DUMP": Top-Loading, with Fast, Vacuum-Controlled Discharge Door, or Combination Top-or-End Loading—to meet conditions. 2 to 5 yd. sizes.

OR "LOW CHARGE": Fastest on market. 2 to 8 yd. sizes. All Jaegers have 2-Speed Transmission (Vacuum-Controlled Truck Engine or Separate Engine Drive). One-Shot Loading, Dual-Mix Drum, Fastest Discharge.



**THE JAEGER
MACHINE CO.**

803 DUBLIN AVE.
COLUMBUS, OHIO



Four 2 Yd. Units did 190 yds. in a day with this setup at Linthicum, N. C.





Tractor equipped with bulldozer reclaims cinders from stockpile to hopper over pan conveyor into plant

lorry can be easily moved on a 40-ft. Yale overhead trolley to either mixer. In addition to the two 28-cu. ft. mixers, the trolley extends to the end of the floor where a 12-cu. ft. Stearns mixer is located for mixing concrete used in the casting room below. Lintels, joists, beams, and other precast items are manufactured in this room. All cement is handled in cloth sacks which are cleaned in a beater type cleaning machine at considerable saving in cement.

The block manufacturing room is laid out with the two Stearns Jolt-cretes on one side of the room. Paralleling the machines are three narrow gauge tracks on which block rack cars are moved from the machines to the steam vapor curing rooms or to outside storage. One track next to the block machines is used to take loaded cars into the curing rooms and two of the tracks are to remove racks from the curing rooms. There is a transfer track at each end of the block manufacturing room, one at right angles to the curing rooms, and the other connecting with an outside track.

Fluorescent lighting fixtures are used above block machines and mixers. This type of lighting is very efficient and also is less costly to operate.

Each of the four curing rooms has a capacity for 1600 8- x 8- x 16-in. or equivalent units, each rack holding 72 units. The steam vapor curing period runs from 12 to 24 hr., depending on the number of block machines being operated. A 40-hp. boiler supplies steam at 15 p.s.i., and the room temperature is about 160

deg. F. Tracks extend out of the curing rooms to a transfer track which connects with tracks in aisles between stockpiles of block. Outside storage is approximately 300,000 units of 8- x 8- x 16-in. units or equivalent.

Cinder Concrete, Inc., makes 3-, 4-, 6-, 8-, and 12-in. wide units in variations of the 8- x 8- x 16-in. size, and a full line of specials. Sand and gravel block are also made, but there is little demand for them in this territory as the lighter weight block are favored.

Three 1½-ton trucks are operated by the company; two Fords and a Chevrolet. Deliveries on big jobs are also made by contract haulers. The company is working almost ex-

clusively on Government orders. Blocks have been furnished for a munitions plant, two Army camps, two air fields, an Army hospital, and two Government housing projects. One Government project, an army camp, required one million 8- x 8- x 16-in. equivalent units.

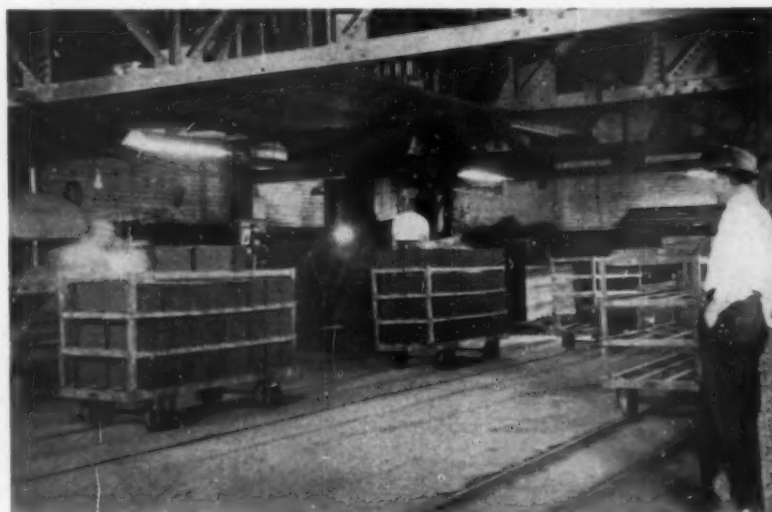
Before the Government swamped the company with business and "froze" private building construction, a regular newspaper and radio advertising program was carried on but this has been discontinued until private building may be resumed.

The Denver plant of Cinder Block, Inc., is one of two plants operated by the company; the other is located at Kansas City.

Officers of the company are Deane R. Lynde, president; Geo. Goeltzer, vice-president; Morris S. Fogel, secretary; and Paul M. Fogel, treasurer. Ruedy A. Utiger is general superintendent of both plants.

Controlling Variables in the Concrete Mix

SCIENTIFIC CONCRETE SERVICE CORPORATION, Washington, D. C., has issued a new booklet entitled, "Profits in Concrete" in which the advantages of a close control of variation in moisture content are outlined. The booklet describes the use of the (SC)² moisture meter and compensator batching scale. This method of moisture and mix control in the production of ready mixed concrete also provides for a visual, automatic record of every ingredient in every batch.



Two truckloads of green block ready to be moved into steam curing rooms; empty racks on tracks out of curing rooms. Ruedy Utiger, general superintendent, to the right

Concrete Replacing Cast Iron

Bathtubs, manhole covers, and traffic buttons of concrete are made by Salt Lake City manufacturer of cast stone and concrete masonry products

By RALPH S. TORGERSON

BUSINESS is humming in Salt Lake City, Utah, with new war industries, peak production in the copper and other vital metal mines and smelters, and construction work for the armed services at various camps throughout the State.

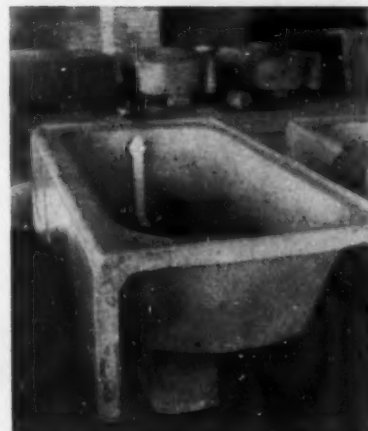
Otto Buehner & Company, well-known cast stone and concrete block producer of Salt Lake City, decided it would take advantage of every opportunity to enter the war effort. Contracts were obtained to supply large quantities of lightweight concrete block for war industry construction and army camp structures, and a study was also made of possible new products which its well-equipped cast stone department could make.

In this search for new products, it was found that the federal government was anxious to replace vital metals wherever possible with substitute materials. War industries had attracted thousands of workers who could not find any suitable living quarters, and several housing projects were organized and started by the

government to alleviate this condition. One of the problems involved the shortage of plumbing and other sanitation fixtures. Cast iron bathtubs were almost unobtainable. Otto Buehner, president of the company, decided to experiment with the design and manufacture of a concrete bathtub which could be sold at reasonable cost to the housing project authority. After considerable experimentation, a concrete bathtub was produced that met the requirements of the government, and manufacturing operations were started on a mass production schedule in a new plant addition. About 35 to 40 concrete bathtubs of the 5-ft. standard recessed type are made every day.

Combination of Concrete and Plaster Molds

Concrete was used in casting the bathtub inside molds in one piece. The concrete part of the mold includes the inside of the tub and the apron. The outside molds were made in three sections, two ends and one side. These sections were held to-



Finished concrete bathtub equipped with plastic overflow and drain fixture

gether with a wooden frame and wedges. The assembled bathtub molds are raised above the floor on metal skids for easy handling and to bring them into more convenient reach for pouring and finishing operations.

A very dense concrete is required for the bathtubs. Reinforcing steel weighs only 5 lbs. Concrete is moved from the mixer to the casting room in rubber-tired "buggies" and shoveled by hand into the molds. After the casting, the molds, mounted on skids, are moved into the steam curing rooms.

Manufacturing Methods

The concrete is allowed to settle out and then is vibrated with an air vibrator and finished smooth with a trowel. Loops of heavy wire are in-



Left: A corner of the casting room showing some of the molds after concrete has been poured. Right: Concrete inside mold with outside sections of mold laying on each side



New vibrating block machine with pneumatic off-bearer recently added to meet the heavy demand for block

sented in the concrete to be used in moving the finished tub by means of an overhead traveling crane and hoist. Special lifting equipment was designed by the company for use with the hoist, comprising a clevis, steel bar, chains and hooks. After the concrete has cured sufficiently for removal from the mold (about 24 hrs.), the tub is turned up and inspected. Even the slightest pin holes or imperfections are sealed. The final step requires a buffing operation to give the surface a high polish. The finished bathtub has almost the appearance of a highly polished marble.

One of the secrets of success in making the tubs is the highly polished inside concrete mold. This mold must have a perfectly smooth finish. The plaster outside mold, of course, does

not require the same care as the inside mold, but it must be properly treated with a suitable oil to prevent any suction on the concrete.

The concrete tubs are equipped with a plastic overflow and drain fitting. The drain end of the fitting, shown in the illustration, has two rubber composition washers or gaskets which prevent any leakage. Concrete tubs have been subjected to a very severe test.

Traffic Control Buttons and Manhole Covers

In search for a substitute for the metal traffic buttons, the Utah State Highway Department turned to Otto Buehner & Co., for something. The result is shown in one of the illustrations. It is made of a very dense

white concrete, and has an excellent reflecting surface which has proved to be very satisfactory in service. Salt Lake City also has decided to use the traffic buttons and concrete curbing.

Manhole covers are being manufactured to the Cast Stone Institute design, on which patents are pending. Illustrations show the molds and the finished products. Details of this design were illustrated in *Rock Products*, October, 1942, p. 71. The manhole cover is somewhat similar to the appearance of the cast iron type, and has stood up under tests in airport runway construction and for use in new housing development areas.

Concrete Blocks

To meet the demands for war industry and army construction, the company recently placed in operation a new Besser Super Vibrapac block machine, with pneumatic off-bearer attachment, which has a capacity of 4800- 8 x 8 x 16-in. units in 8 hr. Aggregates are a volcanic cinder and sand and gravel. Steam vapor curing kilns have a capacity for 10,000 units in 24 hrs. In addition to the new Besser machine, there is a Stearns tamping machine to augment capacity. Deliveries are made direct to the job by trucks.

Pipe for Bomber Plant

GENESEE CONCRETE PIPE, INC., Fenton, Mich., has been extremely busy making concrete pipe for a bomber plant and airport and also for a tank plant. Another project requiring a large amount of pipe is an express highway in Warren Township, Mich.

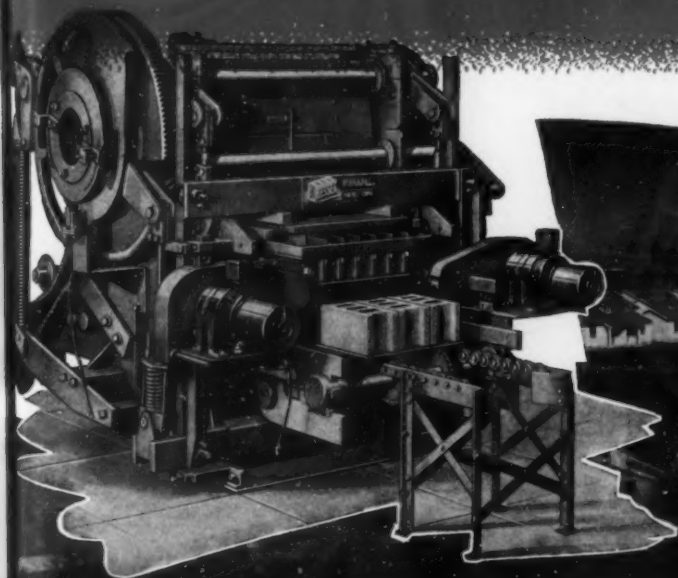
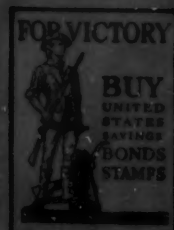


Left: Some of the concrete manhole covers in the storage yard ready for shipment. Right: A smoothly finished concrete traffic button

BESSER VIBRAPACS

Open New Production Frontiers for Concrete Masonry

The concrete block industry has been of tremendous importance in war building construction. Besser Vibrapacs have taken a foremost part in this war building program because of greater quantity production and superior quality product.



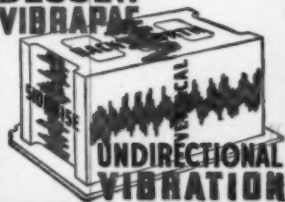
BESSER PLAIN PALLET STRIPPERS

A Besser Plain Pallet Stripper For Every Need

TAMPERS	Besser Super Automatic	8 Hr. Capacity 3120
	Besser Victory Automatic	8 Hr. Capacity 2160
	Besser Semi Automatic	8 Hr. Capacity 1680
	Besser Champion, Power Operated	8 Hr. Capacity 1000 to 1200
	Besser Multi-Mold, Hand Operated	8 Hr. Capacity 250 to 350
VIBRATORS	Besser Super Automatic Vibrapac	8 Hr. Capacity 4800
	Besser Victory Automatic Vibrapac	8 Hr. Capacity 2160
	Besser Master Vibrapac, Hand Operated	8 Hr. Capacity 600

The Besser factory is operating full force for defense production. While this production is principally war materials, yet any products, in-plant equipment, including repair parts, needed for production of blocks on essential war construction can be supplied promptly.

**BESSER
VIBRAPAC**



Undirectional vibration under Flom patents (other patents pending) was employed to make the first vibrated blocks ever produced commercially. The Besser Vibrapac combines undirectional vibration with the exclusive Besser Plain Pallet principle. Users of these machines are fully protected under Besser and Flom patents.

BESSER MANUFACTURING CO.

212 Forty-Second St.

Alpena, Mich.

*Complete Equipment for Concrete
Products Plants*

**THE SAVING IN PALLET COST WILL PAY FOR
A BESSER VIBRAPAC PLAIN PALLET STRIPPER**

Another Army Contract for Concrete Block

J. E. EVANS, concrete products manufacturer of Shelbyville and Columbus, Ind., who participated in a million-block contract for the construction of Camp Atterbury, recently received an additional order for the construction of 26 more buildings being erected at the camp.

Add Ready Mix Truck

THE BOICHOT CONCRETE PRODUCTS Co., Lansing, Mich., recently added to its fleet a new 5-cu. yd. Smith mixer mounted on an International truck. The company also has made a number of other improvements to increase plant efficiency.

City Sells Concrete Plant

YAKIMA CEMENT PRODUCTS Co., Yakima, Wash., has purchased a concrete products plant and equipment operated by the city of Yakima for the manufacture of concrete grave liners for Tahoma cemetery. The city had lost money on the plant for some time, according to newspaper reports.

Big Ready Mix Contract

THE BURROUGHS TRANSIT MIX Co., Flint, Mich., has a contract to furnish 35,000 cu. yd. of concrete for the construction of a new plant being erected by the Dow Magnesium Corporation in Michigan.

Repair Parts Assured

POINTING UP the importance of keeping the nation's civilian economy in a healthy condition, the Requirements Committee of the War Production Board recently authorized that the top priority rating of AA-1 may be applied to essential repair and maintenance.

Included in the scope of the determination, which becomes a basic policy for the first quarter of 1943, are

essential repairs and maintenance for productive facilities, utilities, housing and consumers' durable goods.

The action will make it possible for vital plants and factories, mines and refineries and other industrial facilities to continue effective production of both munitions of war and essential civilian goods. Communications and transportation systems, gas, oil and water lines and other services will be assured of materials to keep them performing their essential functions. Supplies and materials needed for essential maintenance and repair for housing also may be obtained.

Until the Controlled Materials Plan goes into full operation, the existing priorities system will be used to obtain the steel, copper and aluminum needed for such maintenance and repair. Under CMP each agency will break down its material requirements three ways: into that needed for production, construction and facilities, and maintenance and repair.

By including maintenance and repair requirements in the over-all ma-

terials program, C.M.P. provides a long-range assurance that the nation's essential industries will be kept in operation.

Cement Production At All-Time Record

BUREAU OF MINES reports that the portland cement industry in September, 1942, produced 17,527,000 bbl., shipped 20,150,000 bbl., and had in stock at the end of the month 12,656,000 bbl. Production and shipments of portland cement in September, 1942, showed increases of 8.7 and 10.2 percent, respectively, as compared with September, 1941. Portland cement stocks at mills were 27.9 percent lower than a year ago.

The total production for the nine months ending September 30, 1942, amounts to 134,054,000 bbl., compared with 118,573,000 bbl. in the same period of 1941, and the total shipments for the nine months ending September 30, 1942, amounts to 141,277,000 bbl., compared with 124,440,000 bbl. in the same period of 1941.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 153 plants at the close of September, 1942, and of 157 plants at the close of September, 1941.

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

	Au-				
	September 1941	August 1942	July 1942	June 1942	May 1942
The month..	78.0	87.0	85.0	80.0	79.0
12 months ..	62.0	73.0	73.0	71.0	71.0

Adds to Mixer Fleet

LOUIS FOSTER LUMBER & BUILDERS SUPPLY Co., Port Huron, Mich., whose ready mixed concrete business has expanded very rapidly, recently added three more 3½-cu. yd. Jaeger mixer trucks to its fleet. Mixers are mounted on Mack truck chasses.

COMING CONVENTIONS

National Concrete Masonry Association, Sherman Hotel, Chicago, Ill., February 16 and 17, 1943.

National Crushed Stone Association, Hollenden Hotel, Cleveland, Ohio, January 25 to 27, 1943.

National Ready Mixed Concrete Association, Hotel Statler, Cleveland, Ohio, January 27 to 29, 1943.

National Sand and Gravel Association, Hotel Statler, Cleveland, Ohio, January 27 to 29, 1943.

WAR PRODUCTION PROJECTS NEED TRANSPORT MIXERS

EARLY DELIVERIES MADE ON HIGH PRIORITY RATED ORDERS



One of thirty Transport Mixers that truck mixed 400,000 cu. yds. on a midwestern Ordnance Plant.

The speed required by the war program demands early delivery on construction projects. After delivery the contractor must have concrete placed in a hurry.

Transport Mixers Answer This Demand!

Full open top design for fast loading—Revolving helical mixing blades—mixing while loading—mix faster and produce more uniform concrete—positive water control—combination side and rear discharge for ease of placing concrete—inexpensive to own.

Call or Wire for Delivery Date

CONCRETE TRANSPORT MIXER CO. INC.

630 Rosedale Ave., DELmar 3900, St. Louis, Mo.

More Special Cements

STATISTICS on special cements for 1941 issued by the Bureau of Mines show a total of 6,063,638 bbl., of high-early-strength shipments from mills 6,123,224 bbl. valued at \$11,443,792, an average of \$1.87 per bbl. Corresponding figures for 1940 indicate a production of 4,478,797 bbl., shipments, 4,401,449 bbl., valued at \$8,243,315, an average of \$1.87 per

bbl. No figures were reported for masonry portland cement. Masonry cement (other than masonry-portland and masonry natural) production in 52 plants in 1941 amounted to 3,097,382 bbl., and shipments, 3,080,605 bbl. valued at \$4,636,497, an average of \$1.51 per bbl. For 1940 output of 44 plants amounted to 2,312,155 bbl., and shipments 2,260,636 bbl. valued at \$3,175,088, an average of \$1.40 per bbl.

Precast Concrete Manhole Fittings

Corrections and additions to article in October issue

THE EDITOR: My attention has just been called to the article in the October issue of ROCK PRODUCTS dealing with the concrete manhole fittings being produced by Badger Concrete Co. according to the Cast Stone Institute design. On page 83 the statement is made that this design has been approved by the National Bureau of Standards. This is wholly incorrect since it is not the practice of the Bureau of Standards to "approve" any commercial product. It is quite likely that this statement may cause embarrassment to the Bureau of Standards as it will to the Cast Stone Institute. I am sure you will wish to make a correction.

The article also brings out that an application has been made for a patent on this particular design of concrete manhole fitting, without making clear that this action was taken to guard against the possibility of the basic idea being tied up through patents taken by others, rather than with the idea of collecting royalties on the manufacture and sale of the fittings.

We are glad to see that in this article the importance of high quality and good workmanship in concrete manhole fittings are emphasized. In the case of a product of this kind there certainly is no room for guesswork or carelessness in manufacture. There seems to be some confusion as to the size of the possible load which may come upon manhole covers—in one trade magazine the statement was made that 9,150 lbs. was the maximum load which any truck could impose on a manhole cover. This is contrary to the specifications of the American Society of State Highway Officials which require that for the heaviest truck loadings the covers shall be able to withstand 16,000 lbs. plus 25 per cent for impact. It would be a service to your readers and to the concrete products industry if you would point out the danger that lies

in the use of an insufficiently strong cover. In this connection you may be interested in the suggested form of specification which we have prepared.

C. G. WALKER,
Assistant Secretary,
Cast Stone Institute.

Washington, D. C.,
Oct. 14, 1942.

SUGGESTED SPECIFICATIONS CONCRETE MANHOLE FRAMES AND COVERS

The following specification is intended to suggest requirements which, if met, will insure delivery of a highly dependable product under conditions of open competition. In order that the experience and ingenuity of manufacturers may be left free to work out details which are most advantageous from the standpoint of the production and use of concrete in manhole fittings, this specification is purposely not based upon a particular design.

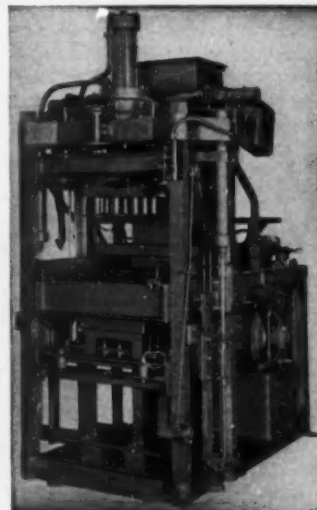
Frames and covers for standard 24-in. manholes shall be of precast reinforced concrete of such design and construction as will withstand the load and impact imposed by a standard H-20 truck as defined by the American Association of State Highway Officials (16,000 lbs. plus 25 percent for impact) with a reasonable margin of safety. Test data showing the load carrying capacity of the type of unit proposed by the Bidder shall be submitted with bid. Manufacturer shall guarantee units against defects of material and workmanship.

Concrete in frames and covers shall be dense and water-tight, with a compressive strength at 28 days of age of not less than 7,500 lbs. per sq. in. when tested in the form of 2-in. cubes, oven dried. Top surface of covers shall have a smooth, hard-trowelled finish. Bottom surface of cover shall be coated with a hard drying asphaltum or similar material. Edges of cover and frame exposed to traffic shall be protected against chipping and ravelling. Frame shall be provided with suitable lifting hooks and cover shall be provided with means of lifting from frame. Cover shall lie flat in its frame.

Covers shall not weigh more than 100 lbs. each and frames (8 in. high) shall not weigh more than 225 lbs. each. Combined weight of steel used in frame and cover shall not exceed 35 lbs.

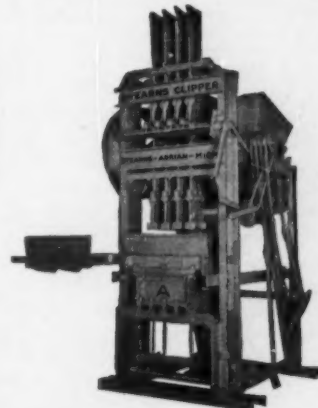
Design and details of construction of frame and cover shall be subject to approval by the Engineer who shall also have the privilege of having one unit out of each 25 or fraction thereof tested under a proof load of 25,000 lbs. applied through an 8 in. diameter bearing block at the center. Units which are used for test purposes and which after test show no evidence of cracking or other damage may be re-used for actual installation.

HYDRAULIC VIBRA-PRESS



A High Production Machine
Making Blocks which are
Demanded by the Contractor
Endorsed by the Architect
Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO



"ANCHOR"

Complete equipment for making concrete, cinder and other light weight aggregate units, including engineering service for plants and revamping of old ones for more economical service. Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltercrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mch. Co.
G. M. Friel, Mgr. Columbus, O.

War Housing Is Big Market for Concrete Products

IF THE CONCRETE PRODUCTS INDUSTRY convinces the federal housing authorities that concrete masonry meets the requirements for war housing accommodations, a large market is opened to producers near centers of war industry. Local housing agencies will have to be sold as well as the National Housing Agency.

John B. Blandford, Jr., administrator of the National Housing Agency, has announced that \$2,000,000,000 has been spent for war housing out of Government and private funds since July 1, 1940. There are now under construction 76,000 dwellings valued in excess of \$300,000,000 and priority orders have been granted for 111,000 more.

The War Manpower Commission estimates that at least 12,000,000 workers will have to be placed in new jobs to take care of increases in employment, replacements for men going into the armed forces and to replace workers lost from the labor force through death and retirement during the period July 1, 1942, to July 1, 1943, reports Mr. Blandford. It is estimated that 670,000 new living accommodations of various sizes will be required. Private industry has

been asked to build 270,000 family units, for which priority ratings are now available. Public construction, both scheduled and still to be appropriated for, provide the remainder, which will include 205,000 family units and 195,000 dormitory and dormitory apartment accommodations. This nation-wide program is designed to help meet the minimum housing needs of some 550 localities.

Although temporary types of construction are being stressed, it is being pointed out by the War Production Board that laid-up masonry also is suitable for temporary construction to replace lumber which is now so critical. Where it is necessary that a structure be later demolished, it is only necessary to use weaker mixes of mortar as a bonding material to facilitate dismantling. Much construction time will be saved if structures are designed originally for masonry instead of for frame with alternate for masonry.

The WPB now requires that concrete floors be used wherever possible to conserve the supply of hardwood for projects of more than one story. Sub-flooring and softwood flooring is to be omitted for all future projects. The first floor construction for all temporary housing units, including dormitories and family dwelling units

is to be of concrete slabs bearing on the ground with insulation at the edge of the slab at or near the exterior wall to prevent heat loss.

Funds for public war housing are provided under an amendment to the Lanham Act approved by the President on October 1 which authorizes an additional \$600,000,000 for this purpose.

Moving Pipe Plant

AMERICAN PIPE AND CONSTRUCTION Co., is moving its plant facilities and staff from Tacoma, Wash., to Cincinnati, Ohio, to fill an order for 90,000 ft. of pressure concrete pipe. Equipment also will be moved from its Los Angeles plant. The pipe is made by the spun process. Earl Rieck, manager of the Tacoma plant, is moving to Cincinnati.

Pavement Yardage

AWARDS of concrete pavement for October, 1942, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During October, 1942
Roads	2,805,819
Streets and Alleys	2,046,630
Airports	7,600,384
Total	12,452,833



UNCLE SAM

"First" AT

JACKSON & CHURCH

You bet . . . Brick Machines and other concrete products equipment are our business—but Uncle Sam has first call on our facilities for the duration. Except for machines carrying high priorities we have side-tracked business as usual.

However, we can help out with used equipment and repair parts; if you need them, call on us.

When peace comes, J & C will again be ready to serve the industry with a complete line of brick and block machines and handling equipment.

JACKSON & CHURCH COMPANY
 SAGINAW, MICH., U. S. A.

★

You have to look to ROCK PRODUCTS for Leadership in the Industry

★

Los Angeles Companies Take Arizona Contract

A LARGE CONTRACT to supply aggregates and ready mixed concrete for ammunition dumps in Arizona is now being filled as a joint undertaking of the Blue Diamond Corporation, Consolidated Rock Products Co., and Graham Bros., Inc., all of Los Angeles, Calif. Sand and gravel plant equipment and ready mixed concrete trucks and batching equipment were largely assembled from surplus machinery of the three companies removed from plants in the Los Angeles area. The contract involves 175,000 cu. yd. of sand and gravel. Processed material is stockpiled and then withdrawn by tunnel conveyor to a batching plant where it is weighed out from a 4-cu. yd. hopper. All structures are of timber.

OPA Authorizes Higher Cement Prices

AN INCREASE in the prices for cement was recently authorized by the OPA under a separate schedule which removes this commodity from the provisions of the general price ceiling. The Office of Price Administration is reported to have stated that this action was necessary in order to secure an adequate supply of cement in so-called "deficiency areas" and that the increase was justified because of increased transportation costs.

Universal's Honor Roll

UNIVERSAL ATLAS CEMENT CO., New York, N. Y., has installed what is believed to be the world's only concrete Honor Roll of men in the service. It is a precast architectural concrete slab, 3 ft. by 4 ft. by 1½ in. thick, and is permanently embedded



Precast concrete Honor Roll of men in the service. Colors are of exposed aggregates



in a wall built of the same material. Colors for the red border, blue star and white field are made by exposing aggregates of those colors in a matrix of cement. No artificial color pigments are used. Ceramic aggregates are used for the blue star, vitrified glass for the red border and quartz for the white field. The Honor Roll is the product of John J. Earley, Washington, D. C.

Cement Concern Wins Court Decision

A RECENT DECISION of the California District Court of Appeals affirmed a judgment in favor of the Santa Cruz Portland Cement Co., the Santa Cruz Lime Co., Geo. T. Cameron et al. in a suit by three alleged stockholders in the lime company. According to a report of the decision, the complaint asked for a judgment in excess of \$4,000,000; that the court order a dividend paid out of an alleged lime company surplus and that the cement company be enjoined from "defrauding the lime company and its stockholders."

Start Arkansas Crusher

ARKANSAS PRODUCTS Co., recently incorporated by Harrison, Ark., business men started stone crushing operations a mile north of St. Joe to furnish ballast rock for a railroad. Initial production is seven carloads daily. The rock being crushed is from the famous ledge of St. Joe marble which was the source of supply of a lime plant operated at this location but since discontinued.

Doubling Production

THE FERRYVIEW SAND & GRAVEL CO., Rochester, Mich., is erecting a new plant which will virtually double production. Equipment to be installed includes a 3- x 12-ft. Simplicity triple-deck vibrating screen, a 9- x 16-in. Cedar Rapids crusher, and an 8-in. Meckum centrifugal dredge pump.

South Carolina Cement Plant Under Consideration

COMMENTING on a report of the Industrial Mobilization Committee of the South Carolina Defense Council, Governor R. M. Jefferies reported that private capital had been interested in developing cement manufacture in eastern Orangeburg county to the extent of \$3,000,000, but that war priorities had held up equipment for a plant.

New Crushed Stone Plant

C. DUDLEY DE VELBISS CONSTRUCTION Co. is opening a temporary quarry and building a \$10,000 crushing plant near Albany Hill, Calif. Operation of the quarry is needed to supply 30,000 tons of ballast to complete the Maritime Commission belt line railroad between Emeryville and Richmond, Calif.

Sell Sand Concern

KUSTER AND WATERBURY CO., Corona, Calif., has sold its sand and gravel plant to Transit Mixed Concrete Co., Pasadena, Calif., for a reported consideration of \$50,000. J. C. Parson is the new manager of the plant for the purchasers. The property is in the Rancho El Sobrante de San Jacinto territory near Corona. "Considerable new equipment is to be installed in the plant as soon as it can be purchased," said Mr. Parsons. The Transit Mixed Concrete Co., operates plants in Los Angeles, Pomona, Las Vegas, San Bernardino and Hollywood.

Open New Quarry

THE KASER CONSTRUCTION Co., Adel, Iowa, has opened up a new quarry near Pawnee, Okla., to supply crushed stone for a large airport. It is expected that production will exceed 25 carloads daily. This company has completed several large contracts for crushed stone in Kansas and Oklahoma to be used on government war construction.

U. S. Seizes Potash Concern

AMERICAN POTASH & CHEMICAL CORP., with a plant at Trona, Calif., has been taken over by the United States government through the seizure of 480,000 shares of stock said to be owned by Nazi interests. This stock represented about 60 per cent of the company's total shares. Neither the corporation's properties nor management was involved. This company was originally organized by British interests, but it was later sold to Dutch banking interests.

Winners of Sand and Gravel Safety Trophies

Prizes To Be Awarded at Conventions in Cleveland

WITH A LARGER ENROLLMENT than in any previous year, and a larger number of man-hours of work represented, the 13th annual safety competition conducted by the Bureau of Mines, United States Department of



Handsome trophies to be awarded to safety contest leaders

the Interior, in cooperation with the National Sand and Gravel Association for the promotion of accident prevention at sand and gravel plants, has just been concluded. Companies that participated in the contests of both 1940 and 1941 reduced their accident rates in 1941. However, the enrollment of new companies for the first time in 1941 resulted in higher rates for the entire group of enrolled companies in 1941 than in 1940.

The Bureau of Mines conducts these annual contests to promote safety and to assist in reducing the number of accidents to employees in sand and gravel plants. Enrollment in the contest in 1941 covered 88 plants, and these plants worked 5,321,489 man-hours. Two fatalities and 173 non-fatal injuries occurred during the contest year.

Two cup trophies provided by Rock Products magazine are to be awarded to plants having the best safety records. One trophy is awarded to the plant having the best safety record among plants working 100,000 or more man-hours. The other trophy is awarded for the best safety record among plants working less than 100,000 man-hours. In addition to the trophies, each plant working the entire year without a lost-time injury is awarded a Certificate of Merit.

Winners of the 1941 Trophies

The Chelsea lake plant, operated by the Missouri Portland Cement Co., won the trophy in the group that worked 100,000 or more man-hours. This plant, located in Memphis, Shelby County, Ten-

nessee, worked 116,726 man-hours in 1941 without a disabling injury.

The No. 2A wet-pit plant, operated by the American Aggregates Corporation, won the trophy in the group working less than 100,000 man-hours. This plant, located in Columbus, Franklin County, Ohio, worked 73,320 man-hours in 1941 without a disabling injury.

Winners of Certificates of Merit

Thirty-six plants (excluding the two trophy winners) of the 88 enrolled in the contest were operated without a disabling injury. Certificates of Merit are awarded by Rock Products to these plants, all in the "less than 100,000 man-hours" group, for having a perfect safety record in 1941. These 36 plants are as follows:

Quigley wet-pit plant, Hurst, Tarrant County, Texas, operated by the Ft. Worth Sand & Gravel Co., worked 63,971 man-hours.

Lake plant, Chicago, Cook County, Ill., operated by the Lake Sand Corp., worked 58,200 man-hours.

Nos. 5 and 6 lake plant, Plattsmouth, Cass County, Neb., operated by the Lyman-Richey Sand & Gravel Corp., worked 56,915 man-hours.

Fort Jefferson wet-pit plant, Fort Jefferson, Darke County, Ohio, operated by the American Aggregates Corp., worked 46,113 man-hours.

Urbana No. 9 wet-pit plant, Urbana, Champaign County, Ohio, operated by the American Aggregates Corp., worked 44,679 man-hours.

Boonville dry-bank plant, Boonville, Onondaga County, N. Y., operated by the Eastern Rock Products, Inc., worked 39,907 man-hours.

Akron wet-pit plant, Akron, Summit County, Ohio, operated by The Rubber City Sand & Gravel Co., worked 37,265 man-hours.

Circleville wet-pit plant, Circleville, Pickaway County, Ohio, operated by The Sturm & Dillard Co., worked 35,058 man-hours.

No. 7 dry-pit plant, Plattsmouth, Cass County, Neb., operated by the Lyman-Richey Sand & Gravel Corp., worked 34,298 man-hours.

Portland dry-bank plant, Portland, Northampton County, Penn., operated by the Portland Sand & Gravel Co., worked 33,227 man-hours.

Illinois - Wisconsin dry-bank plant, Beloit, Winnebago County, Ill., operated by the Illinois-Wisconsin Concrete Pipe Co., worked 32,092 man-hours.

Erie lake plant, Erie, Erie County, Penn., operated by the Erie Sand & Gravel Co., worked 31,761 man-hours.

Mason City dry-pit plant, Mason City, Cerro Gordo County, Iowa, operated by the Ideal Sand & Gravel Co., worked 30,469 man-hours.

Kalamazoo dry-bank plant, Kalamazoo, Kalamazoo County, Mich., operated by the American Aggregates Corp., worked 29,375 man-hours.

Warren river plant, Warren, Warren County, Penn., operated by the General Concrete Products Corp., worked 27,737 man-hours.

Nos. 9 and 11 lake plant, Valley, Douglas County, Neb., operated by the Lyman-Richey Sand & Gravel Corp., worked 27,718 man-hours.

Nos. 1, 2, 3 and 4 lake plant, Louisville, Cass County, Neb., operated by the Ly-

man-Richey Sand & Gravel Corp., worked 26,591 man-hours.

Sierra No. 19 dry-pit plant, Monrovia, Los Angeles County, Calif., operated by the Consolidated Rock Products Co., worked 25,541 man-hours.

Steubenville river plant, Steubenville, Jefferson County, Ohio, operated by The River Sand Co., worked 25,274 man-hours.

Verona dry-bank plant, Verona, Dane County, Wis., operated by the Hartland-Verona Gravel Co., worked 25,173 man-hours.

Nos. 12 and 13 lake plant, Fremont, Dodge County, Neb., operated by the Lyman-Richey Sand & Gravel Corp., worked 24,599 man-hours.

Hawarden wet-pit plant, Hawarden, Sioux County, Iowa, operated by the L. G. Everist, Inc., worked 21,743 man-hours.

Thomas dry-bank plant, Thomas, Tucker County, W. Va., operated by the Fairfax Sand & Crushed Stone Co., worked 21,042 man-hours.

Staples dry-pit plant, Staples, Todd County, Minn., operated by the L. G. Everist, Inc., worked 16,545 man-hours.

Trenton dry-pit plant, Barneveld, Onondaga County, N. Y., operated by the Eastern Rock Products, Inc., worked 15,833 man-hours.

Bedford wet-pit plant, Garfield Heights, Cuyahoga County, Ohio, operated by The Schmidt Bros. Sand & Supply Co., worked 14,758 man-hours.

No. 23 lake plant, Bridgeport, Morrill County, Neb., operated by the Lyman-Richey Sand & Gravel Corp., worked 11,076 man-hours.

Manly dry-pit plant, Manly, Worth County, Iowa, operated by the L. G. Everist, Inc., worked 10,929 man-hours.

Ludlow Falls lake plant, Ludlow Falls, Miami County, Ohio, operated by the Steiners Washed Sand & Gravel Co., worked 10,459 man-hours.

Muskegon dry-pit, wet-pit plant Muskegon, Muskegon County, Mich., operated by the Nugent Sand Co., worked 10,209 man-hours.

Norman river plant, St. Charles, St. Louis County, Mo., operated by the Norman Trading & Trans. Co., worked 9,079 man-hours.

West Alexandria river plant, West Alexandria, Preble County, Ohio, operated by the Pioneer Sand and Gravel Co., worked 7,650 man-hours.

Fort Gay river plant, Fort Gay, Wayne County, W. Va., operated by the Laval Sand Co., Inc., worked 7,105 man-hours.

Seattle dry-pit plant, Seattle, King County, Wash., operated by the Mutual Materials Co., worked 6,579 man-hours.

No. 17 lake plant, Central City, Merrick County, Neb., operated by the Lyman-Richey Sand & Gravel Corp., worked 6,260 man-hours.

Celebrate 200th Anniversary

CONGRATULATIONS are being extended to Taylor-Wharton Iron and Steel Co., High Bridge, N. J., on its 200th anniversary. Not very many companies have the distinction of celebrating the 100th anniversary of continued existence as a business enterprise, but those companies which can count an unbroken history of 200 years are extremely rare in this country. The Taylor-Wharton Iron and Steel Co. and its products are well known throughout the rock products industry. Reading through the pages of the 53-page, beautifully illustrated anniversary booklet is like a review of American industry from Colonial days up to the present stirring days of another World War.

ROCK PRODUCTS

Quarry Safety Contest

SOME NOTABLE RECORDS were rung up by quarries and mines participating in the Bureau of Mines 1941 safety contest. There were 250 mines and 151 quarries in the safety competition, representing 40 states. "Sentinels of Safety" trophies donated by the *Explosives Engineer*, were awarded in the nonmetallic-mineral-mine classification to the No. 6 gypsum mine of the United States Gypsum Co., near Plasterco, Washington County, Va., operating 254,198 man-hours without a lost-time accident, and in the quarry group to the Dolonah dolomite quarry of the Tennessee Coal, Iron, and Railroad Co., located near Bessemer, Jefferson County, Ala., operating 270,474 man-hours without a lost-time accident.

Honorable mention certificates were awarded to the following:

Nonmetallic-mineral Mines

Columbia Quarry Co., No. 3 limestone mine, Valmeyer, Ill.
Medusa Portland Cement Co., Wampum, Penn.
Missouri Portland Cement Co., Independence, Mo.
The Carey Salt Co., rock salt mine, Hutchinson, Kans.

Quarries

Bethlehem Steel Co., Bethlehem, Nagney, Steelton, and Hanover, Penn.
Colorado State Penitentiary, Canon City, Colo.
Folsom State Prison, Folsom, Calif.
General Crushed Stone Co., Auburn, Watertown, and Jordanville, N. Y.; White Haven, Penn., and Winchester, Mass.
New Haven Trap Rock Co., New Branford, Plainfield, Middlefield, and Rocky Hill, Conn.
North American Cement Corporation, Hagerstown, Md.; Martinsburg, W. Va., and Catskill, N. Y.
Universal Atlas Cement Co., Hudson, N. Y., and Northampton, Penn.
Lehigh Portland Cement Co., Fogelsville, Sandts Eddy, and Ormrod, Penn.; Birmingham, Ala., Oglesby, Ill., Iola, Kans., Union Bridge, Md., and Alsen, N. Y.
Lone Star Cement Corporation, Jackson, Ala.; Bonner Springs, Kans.; Greentown, N. Y., Greencastle, Ind., and Dallas, Texas.
Missouri Portland Cement Co., St. Louis, Mo.
Warner Co., Bridgeport and Devault, Penn.
J. E. Baker Co., Inwood, W. Va.
Petoskey Portland Cement Co., Petoskey, Mich.
Medusa Portland Cement Co., Sylvania, Ohio; York, Penn., and Dixon, Ill.
Coplay Cement Manufacturing Co., West Coplay, Penn.
Alpha Portland Cement Co., Cemenfon, N. Y.; La Salle, Ill.; and St. Louis, Mo.
Pennsylvania-Dixie Cement Corp., Clinchfield, Ga., and S. Lansing, N. Y.
Dixie Lime Products Co., Reddick, Fla.
Hercules Cement Corp., Stockertown, Penn.
Cowell Portland Cement Co., Cowell, Calif.
National Gypsum Co., National City, Mich.
Southwestern Portland Cement Co., El Paso, Texas.

(Continued on page 114)

Amsco Dredge Pumps Producing Aggregates for T.V.A.'s Big Dams

The Tennessee Valley Authority, originally a long range program, has had heavy, urgent demands made upon its hydro-electric power resources because of the war. New aluminum, magnesium and chemical plants will require current in excess of present production.

To meet these requirements, several projected dams are being rushed to completion, notably the Apalachia and Ocoee Dams.

To supply sand and gravel for concrete aggregates, the Birmingham Slag Company uses two 15" Amsco type "H" heavy duty Dredge Pumps. They are powered by 400 h.p. 440 r.p.m. electric motors which receive current from diesel-generator sets.

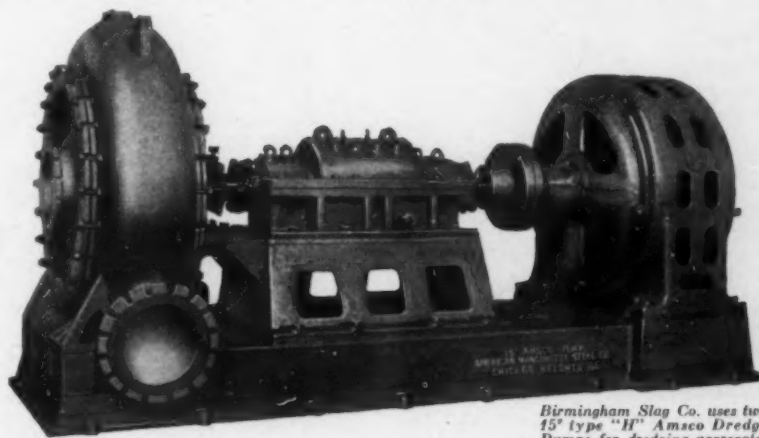
Material is being dredged from the Tennessee River at its confluence with the Hiwassee River about 40 miles upstream from Knoxville, Tenn. All materials are pumped directly to barges which are towed to the com-

pany's modern, shore-type screening and classifying plant at Calhoun, Tenn., 20 miles up the Hiwassee. Barges are unloaded by clamshells which empty into hoppers feeding belt conveyors. After washing and sizing to specifications, processed material is shipped by railway to the dam site.

The large volume of sharp material dredged is handled with minimum wear by the tough manganese steel water-end parts of the Amsco Dredge Pumps used.

Besides helping these projects to rapid completion, the Amsco Pumps are saving metal, in that water-end parts less shock and abrasion resistant would have to be replaced more frequently.

A bulletin is available completely describing Amsco Dredge Pumps of standard and Counterflow design, and dredge cutterheads, piping valves and fittings.



Birmingham Slag Co. uses two 15" type "H" Amsco Dredge Pumps for dredging aggregates from Tennessee River for construction of T.V.A. Dams.

Amsco
AMERICAN MANGANESE STEEL DIVISION
OF THE AMERICAN BRAKE SHOE & FOUNDRY CO.
Chicago Heights, Illinois
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

Genuine Manganese Steel, "The Toughest Steel Known"
Chromium-Nickel Alloy Castings for heat and corrosion
Power Shovel Dippers, Dredge and Industrial Pumps
Welding Materials for reclamation and hard-surfacing

FINANCIAL NOTES

RECENT DIVIDENDS

Alpha Portland Cement Co. Com. (np) .....	.75	Dec. 21
Basic Refractories, Inc. ....	.30	Dec. 15
Bessemer Limestone & Cement Co. ....	.25	Dec. 10
Bessemer Limestone & Cement Co. pfd. ....	.75	Jan. 2, 1943
Blue Diamond Corp. ....	.10	Dec. 15
Canada Cement Co., Ltd. 6½% pfd. (p100) (ar- rears)	1.25	Dec. 15
Canada Crushed Stone Co. Ltd. ....	.10	Dec. 15
Consolidated Cement Corp. \$1.40 Cl. A (np) (arrear- s)	1.05	Dec. 15
Lone Star Cement Corp. Q. ....	.25	Dec. 23
Lone Star Cement Corp. Com. ....	.75	Dec. 23
Dolese & Shepard Co.	1.00	Dec. 10
National Gypsum Co. ....	.25	Dec. 30
National Gypsum Co. pfd. 1.12½	Dec. 1	
Nazareth Cement Co. Com. (np) .....	.25	Nov. 25
Ohio River Sand Co. 7% pfd. (p100) (arrear- s)	1.75	Dec. 1
Peerless Cement Corp. ....	.25	Dec. 8
Pennsylvania Glass Sand Corp. Com. (np) .....	.05	Dec. 28
Pennsylvania-Dixie Cement Corp. \$7 pfd. A (np) (arrear- s)	1.25	Dec. 15
U. S. Gypsum Co. ....	.50	Dec. 31
U. S. Gypsum Co. pfd.	1.75	Jan. 2, 1943

PACIFIC COAST AGGREGATES, INC., San Francisco, Calif., had a very excellent financial report to present for the nine months ended September 30, 1942. Net earnings for this period totaled \$501,166 after all charges, as compared with a net of \$201,238 for a similar period in 1941. Comparative profit and loss account for the nine months ended September 30 follows:

	1942	1941
Sales revenue	\$4,207,448	\$2,413,293
Cost of sales	2,972,293	1,827,806
Total	\$1,235,155	\$585,487
Other income (net)	123,202	55,677
Total	\$1,358,357	\$641,164
Selling and general expense ..	289,335	210,405
Depreciation and depletion	233,746	178,933
Total	\$835,726	\$251,826
Federal income taxes	334,110	41,598
Net profit	\$501,166	\$210,228
Net per share	\$0.90	\$0.38

SOUTH DAKOTA STATE CEMENT PLANT, Rapid City, S. Dak., in a report filed with the Secretary of State July 13, gave gross sales for the year as \$668,871 and net sales as \$437,114. Operating expenses were reported at \$208,812, sales expense \$12,965, and administrative expense \$9413. The balance sheet showed cash on hand \$458,225, inventories of \$406,140, and fixed assets valued, after depreciation, at \$1,429,787. Current liabilities were \$88,287, reserves for contingent

expenses \$10,039, and surplus amounting to \$2,195,796 with which to pay off \$875,000 in bonds coming due July 1, 1943.

NORTH AMERICAN CEMENT CORPORATION, New York, N. Y., had a net profit of \$130,974 for the 12 months ended September 30, 1942, after taxes, depreciation, depletion and interest, but before profit on bonds purchased. This compares with a net loss of \$54,105 for the 12 months ended September 30, 1941.

NATIONAL GYPSUM Co., Buffalo, N. Y., had a consolidated net profit of \$311,224 for the three months ended September 30, compared with \$556,681 for a like 1941 period.

ALPHA PORTLAND CEMENT Co., Easton, Penn., reports for the 12 months ended September 30, 1942, subject to audit and year-end adjustments, a net profit of \$1,288,069 after depreciation, depletion, provision of \$796,155 for federal income taxes, etc. This is equal to \$2.03 a share on 634,090 no-par shares of capital stock, excluding 10,510 shares held by company.

This compares with a net profit reported for the 12 months ended September 30, 1941, after provision of \$549,875 for federal taxes, of \$1,225,768, equal to \$1.93 a share.

Current assets as of September 30, last, including \$8,165,450 of cash and U. S. Government securities, amounted to \$11,021,096 and current liabilities were \$1,494,129. These compare with cash and government securities of \$7,340,773, current assets of \$10,098,290 and current liabilities of \$1,279,829 on September 30, 1941. Inventories were \$1,430,389, against \$1,305,203.

Income account for the 12 months ended September 30, 1942, compares as follows:

	1942	1941
Net sales	\$11,078,911	\$9,396,215
Operating income after depreciation and depletion ...	2,101,821	1,747,439
Total income	2,174,949	1,807,179
Income charges ...	90,725	31,533
Federal income tax ..	796,155	549,875
Net profit	\$1,288,069	\$1,225,768
Common dividends. 1.268,180		955,445
Surplus	\$10,889	\$270,523

PENNSYLVANIA - DIXIE CEMENT CORP., New York City, reports for 12 months ended September 30, 1942, subject to audit and year-end adjust-

ments, show net profit of \$872,708 after depreciation, depletion, interest, federal income and excess profits taxes and reserve of \$513,500 for contingencies. This is equal to \$7.20 a share on 121,200 shares of \$7 convertible preferred stock on which unpaid dividends amounted to \$84.25 a share on September 30, last.

This compares with net profit for the 12 months ended September 30, 1941, of \$1,063,727 after contingent reserve of \$276,500, equal to \$8.77 a share on \$7 preferred stock.

The report states that the provision for federal taxes and contingencies is believed adequate for normal, surtax, and excess profits taxes under the Revenue Bill passed by the Senate on October 10, 1942.

Consolidated income account for 12 months ended September 30, 1942, compares as follows:

	1942	1941
Net Sales	\$11,429,264	\$9,312,360
*Operating profit ..	2,689,943	2,085,795
Total income	2,695,706	2,139,877
Interest	209,648	225,000
Federal income & excess profits tax	1,099,850	574,650
Reserve for contin- gencies	513,500	276,500

Net profit

	\$872,708	\$1,063,727
--	-----------	-------------

* After ordinary taxes, depletion and depreciation. Total depletion and depreciation charges amounted to \$952,277 for the 1942 period, of which \$509,743 was charged to operations. The balance of \$442,534 was charged to a special reserve.

ALBERNE STONE CORP. OF VA., New York, N. Y., reported a net income of \$24,457 for the nine months ended September 30, 1942, as compared with \$46,198 for a like period in 1941. Net sales for the first nine months, in 1942 were \$577,449 as against \$591,329 for a similar period in 1941.

LONE STAR CEMENT CORPORATION, New York, N. Y., had a net profit of \$2,281,251 for the nine months ended September 30, 1942. This compares with \$2,908,358 for a like period in 1941. Sales for the first nine months of 1942 were \$26,459,682 as against \$22,397,895 for first three quarters of 1941. Taxes of \$5,121,662 for this period in 1942 are to be compared with \$3,028,998 for a similar period in 1941.

UNITED STATES GYPSUM Co., Chicago, Ill., reported a net profit of \$3,878,148 after all charges for the nine months ended September 30, 1942. For a similar period in 1941, the net was \$1,145,665.

Dig, Haul, Dump



in one operation

On jobs where materials are to be moved distances of several hundred feet or more, a SAUERMAN Drag Scraper or Cableway is a great money-saver because it will dig, haul and place the materials without the help of other equipment.

First cost of a SAUERMAN machine is reasonable, maintenance expense is small, and the simplicity of operation permits easy one-man control of even the largest installation.

This equipment is very flexible and is readily adapted to meet new and difficult working conditions. Sizes range from small portable units designed for cheap handling of a small hourly tonnage of loose materials up to powerful machines that will move as much as 1,000 tons per hour of the toughest materials.

Write for our catalog and see for yourself how others have cut costs on hundreds of dig-and-haul jobs with SAUERMAN Machines.

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FARREL BACON

CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service



EARLE C. BACON, Inc.

17 John St., New York, N. Y.

Handling Explosives

(Continued from page 94)

fired with an ordinary blasting cap, the cap should be securely fastened to the safety fuse with a cap crimper and seated on the freshly cut end of the Primacord with a union. The fuse should be long enough to allow the man who lights it plenty of time to reach a place of safety without running.

If an electric blasting cap is used to initiate the Primacord, it shall be securely fastened to the freshly cut end of the Primacord with a union.

Guard Against Intruders

Before firing, flag men or guards should be placed a safe distance away from the blast and at such locations that they can prevent anyone approaching the shot. A simple, standard and positive system of signals shall be agreed upon so that everyone around the quarry will be warned of the blast in ample time. Obviously, the signal must not be given to close the switch or light the fuse until everyone has reached a place of safety. If possible, observers should stand to the windward of the shot with their backs to the sun and under no conditions should they rush back into the smoke from a shot. A few minutes wait until the smoke dissipates will not have any effect on the results of the blast, and it will allow everyone to return to the scene in safety.

Opening Oro Grande Plant

RIVERSIDE PORTLAND CEMENT CO., Los Angeles, Calif., is opening its Oro Grande, Calif., plant, which has been inactive for ten years, to meet the unusually heavy demands for cement in this area. Clinker from Oro Grande will be ground in mills at the Riverside plant.

May Open Gravel Pit

CONTRACTING company representatives interested in an \$8,000,000 naval air training base in Oklahoma have taken an option on the A. S. Coffan farm gravel pits south of Granite, Okla. This will be a very large sand and gravel plant operation if the deal goes through, according to local reports.

Scrap Old Plant

MAKINS SAND AND GRAVEL CO., Oklahoma City, Okla., has been an important contributor to the local scrap collection campaign. Besides cleaning up around its active plants, an old plant near Sulphur, Okla., was dismantled and scrapped.



Made of
Acid Open Hearth
Steel Wire

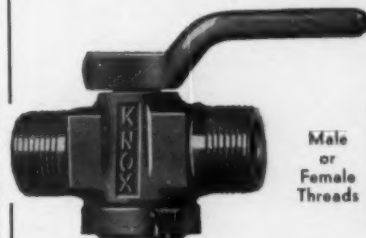
Round Strand
Flattened Strand
Preformed
Steel Clad
Non-Rotating

The Service Record of this wire rope continues to make and hold friends.

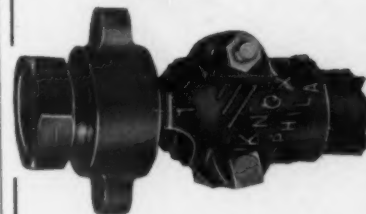
MADE ONLY BY
A. LESCHEN & SONS ROPE CO.

Established 1857

5909 Kennerly Avenue St. Louis, Mo.
New York — Chicago — Denver
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Male
or
Female
Threads



Recognized Universally
as the **ULTIMATE** in
Valves and Couplings

**KNOX
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818 CHERRY ST., PHILA., PA.

Since 1911 Producers of

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Valves-Couplers-Hipplers-Clamps-Menders

Will Repairs be Rationed?

Maybe not . . . but parts will be hard to get. So plan your equipment purchases wisely in 1943. **LOAD LUGGERS** not only conserve trucks, and boost hauling capacity, but break all records for *low maintenance*. Their simplicity saves repairs . . . no cables, no rollers, no counterweights.

One-piece all-welded buckets. Built to last for the duration. The Brooks System is the thrifty and speedy way to move materials for feeding crushers, building roads, quarrying stone, hauling supplies, removing overburden and many other jobs, where loading is done by hand labor.



Use 5 to 10 detachable "bodies" or buckets on each job for loading, hauling and dumping.



Brooks
EQUIPMENT & MFG. CO.

812 Davenport Road

KNOXVILLE

TENNESSEE

Distributors in all
Principal Cities

MODEL 51



BLAST HOLE DRILL CRAWLER MOUNTED AND STABLE IN TRACTION—Short moves can be made with derrick standing.

The outstanding feature of this modern rock drill is its welded and riveted sturdy frame. Pounding down six inch holes in hard rock, gives a rock drill a lot of jolts—and that is why KEYSTONE engineers employed a combination of both welding and riveting to give it a rugged and durable frame foundation.

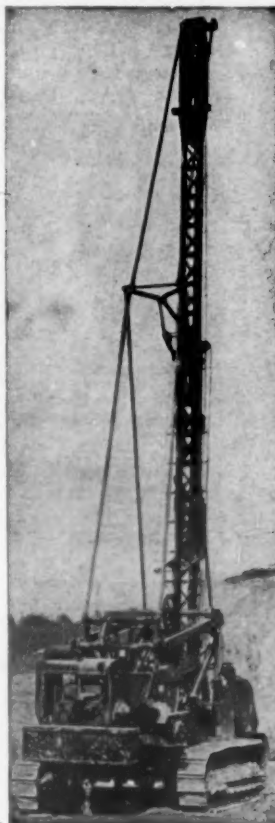
The working mechanism of the Model 51 crawler traction drill is likewise made to take rough service. Shafts and anti-friction bearings are oversized. The length and character of the stroke are adjustable to give greatest efficiency.

You can be sure of getting a superior piece of equipment that will give you dependable performance for years if you select a KEYSTONE Blast Hole Drill.

You will want to know more about it.

Write for Bulletin BD-1141.

KEYSTONE DRILLER CO.
Beaver Falls, Penna.



Quarry Safety Contest

(Continued from page 111)

American Lime & Stone Co., Tyrone, Penn.
New York Trap Rock Corp., Verplanck, N. Y.
Diamond Portland Cement Co., Middle Branch, Ohio.
Edison Cement Corp., New Village, N. J.
Marquette Cement Manufacturing Co., Earlham, Iowa.
Allentown Portland Cement, Evansville, Penn.
Lawrence Portland Cement Co., Northampton, Penn.
Dewey Portland Cement Co., Dewey, Okla.
Indiana State Farm, Putnamville, Ind.
Rochester State Hospital, Rochester, Minn.

Columbia Quarry Co. No. 3 mine, Valmeyer, Ill., was the 1941 award winner in the contest conducted by the Bureau of Mines in cooperation with the National Crushed Stone Association. There were 51 participating plants of which 20 had accident-free records entitling them to honorable mention. The Valmeyer mine is the first under-ground operation to win the award since the contests were inaugurated. It operated 159,569 man-hours without a lost-time or disabling accident and had received honorable mention in 1931, 1932, 1933 and 1936 for perfect safety records.

Sand-Lime Brick Production and Shipments

FIVE active sand-lime block and brick plants reported for October and seven for September, statistics for which were published in November.

AVERAGE PRICE FOR OCTOBER

	Plant Price	Delivered Price
Detroit, Mich. ....	.....	\$16.00
Sebewaing, Mich. ....	.....	.....
Saginaw, Mich.	\$13.00	.....
Grand Rapids, Mich. ....	.....	15.00
Seattle, Wash.	16.50	18.50

STATISTICS FOR SEPTEMBER AND OCTOBER

	September	October
Production	2,358,000	1,551,000
Shipments (rail) ...	900,000	230,000
Shipments (truck) ..	1,554,253	1,449,503
Stock on Hand.....	666,159	375,825
Unfilled Orders	850,000	575,000

* Seven plants reporting; incomplete, two not reporting stock on hand and three not reporting unfilled orders.

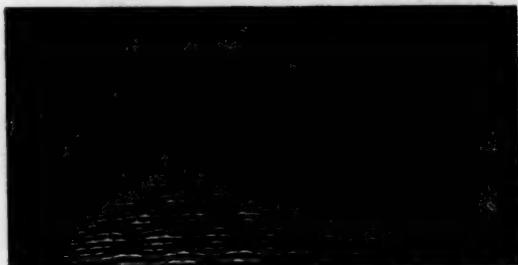
** Five plants reporting; incomplete, two not reporting unfilled orders.

Wire Rope

WICKWIRE SPENCER STEEL CO., New York, N. Y., recently brought out an interesting 24-page booklet which describes this company's early history and the progress up to the present day when the company is largely devoting its production to war efforts. It is entitled, "Something About Our Job in Helping to Win the War." Every page illustrates the story about wire and wire rope and its many uses in industry and war.

SCREENS OF HENDRICK PERFORATED PLATE

- give longer service
- minimize clogging
- maintain uniformity of mesh



Any shape or size of perforation—round, square, hexagonal, slotted, "Squarround", or special. Any thickness of sheet or plate. Flat or rolled to any curvature, single or double corrugated, for any vibrating screen. Available in a variety of metals, particularly Hendrick High Carbon, Heat Treated Steel which is highly resistant to abrasion.

Write for your copy of "Perforated Plate for Vibrating and Shaking Screens".

HENDRICK MANUFACTURING CO.

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SALES OFFICES IN PRINCIPAL CITIES

PLEASE CONSULT TELEPHONE DIRECTORY

Makers of Elevator Buckets of all types, Mitco Open Steel Flooring, Mitco Shur-Bite Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.

You get Operating Advantages in BLAW-KNOX BUCKETS due to better Structural Features



The rigid head in Blaw-Knox Buckets preserves fixed cable alignment between upper and lower sheaves, avoiding cable wear caused by loose or wobbly head construction.

All four corner bars are mounted directly on the head pin, thus all impact or pounding action between the head and scoop structure is transmitted directly and not through bolts or rivets.

This and many other exclusive features of Blaw-Knox Buckets are explained and illustrated in CATALOG No 1757. Write for your copy today.

BLAW-KNOX DIVISION

A BLAW EXCO COMPANY
Farmers Bank Building • Pittsburgh, Pa.

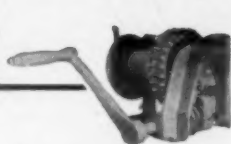
BLAW-KNOX Digging and Rehandling
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WANT A LIFT?

Use Every Mechanical Aid to
Save Manpower. Check into—

S-A WINCHES

Don't take men from other work for heavy lifting and pulling. Multiply the strength of one man with an S-A Winch . . . over a dozen sizes and types for various applications . . . pulling capacities of 500 to 3000 pounds. Write for Winch Bulletin 340, and figure where time and men can be saved.



No. 28 Hand Winch



Style K-2
Motor Winch

STEPHENS-ADAMSON

MFG. CO.

Car Pullers
Car Loaders
Winches

SealMaster
Ball Bearings

Speed
Reducers

Conveyors
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OSGOOD



TYPE 80 AIR CONTROL

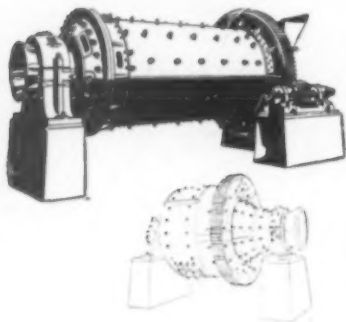
The leader of them ALL for smooth, fast and efficient shovel, dragline or crane operation.

We have a brand new catalog
awaiting your request.

THE OSGOOD COMPANY

MARION, OHIO

IF YOU ARE OPERATING A BALL OR PEBBLE MILL



Write for— "Operation Notes for Ball Mill Users" —Bulletin No. 25-A

Many mills are now being used to produce new products for the War Program. This bulletin contains data that will aid you in improving the operation of your mill.

Repair Parts

We can furnish repairs for any Hardinge Conical Mill if you will give us the mill number on nameplate attached to shell of mill.

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TRAFFIC NEWS

Recent Rate Changes

Following are the latest proposed changes in freight rates up to and including the week of Nov. 21

Central

71155 (Sup. 1 to W. D. A.). Stone, crushed, slag or gravel, coated with oil, tar or asphaltum, in open top cars, C. L. W. D. A. 71155, D. B. 3134, dated June 29, 1942, covering proposal to establish rates on, from Grand Rapids, Mich., to various pts. in N. J., Conn., N. Y. and Pa., is hereby withdrawn from docket on request of proponent.

71570. Sand (industrial) or gravel, in open top cars, C. L. Establish on, from Anderson, Ind., to Ferguson, Ind., 99c per net ton, via N. Y. C. (C), Muncie, Ind., N. Y. C. & St. L. R. R., subject to Ex Parte 148 increase.

71584. Sand (industrial) and gravel, in open top equipment, C. L. Establish on, from Warsaw, Ind., to Hayden Siding, Ind. (between Prairie Switch and Hugo, Ind., on Wab. R. R.), 94c per net ton, via usual routes, subject to Ex Parte 148.

71586. Sand (industrial) and gravel, in open top equipment, C. L. Establish on, from Wolcottville, Ind., to Hayden Siding, Ind. (between Prairie Switch and Hugo, Ind., on Wab. R. R.), 94c per net ton, via Wab. R. R. direct, subject to Ex Parte 148.

71691. Slag, commercial crushed (in bulk in open top equipment), C. L. Establish on, from Youngstown and Hubbard, O., to Platen, Penn., 99c per net ton, subject to Ex Parte 148 increase.

71700. Limestone, crushed, ground or pulverized, not burnt and limestone, agricultural, crushed, ground or pulverized, not burnt, C. L., min. wt. 50,000 lb. (a) To cancel Item 6670, C. F. A. L. Trf. 130B, publishing 60 per cent of 6th class rating on, between points in C. F. A. territory, including Extended Zone C in Wis. and W. T. L. "Northwest" territory, also from points in aforesaid territories to points east of the W. T. of E. T. L. (b) Establish on above commodities, from Bloomington, Greencastle, Ind., Quincy, Marblehead, Ill., Hannibal and White Bear, Mo., to destinations in New England, New York and Brooklyn, N. Y. (the destinations to be the same as those to which rates are now in effect from Mosher and Ste. Genevieve, Mo.), rates on basis of the I. C. C. Dkt. 25220 Carriers' Revised Scale, plus arbitraries prescribed by the I. C. C. said rates to become effective when the cancellation of the 60 per cent of 6th class basis referred to in proposition (a) above becomes effective.

71708. Stone, crushed, having value for road construction only, in bulk, in open top cars, C. L. Establish on, from West Columbus, O., to various B. & O. R. R. destinations in W. Va., rates as shown below:

(Rates in cents per ton of 2000 lb.)	
Representative Destinations	Prop. Rates
Clay, W. Va.	209
Upwood, W. Va.	209
Camp, W. Va.	198
Clendennin, W. Va.	198
Falling Rock, W. Va.	198
Empire No. 2 Mine (Peacock Mine), W. Va.	187
Barlow, W. Va.	187
Letart, W. Va.	176
Mason City, W. Va.	176
Clifton (Mason Co.), W. Va.	165
Henderson, W. Va.	165
Gallipolis, W. Va.	165
Ashton, W. Va.	176

Glenwood, W. Va.	176
Homestead, W. Va.	176
Cox Landing, W. Va.	176
Dam 27, Ohio River, W. Va.	176
Guyandotte, W. Va.	165
Huntington, W. Va.	165

71709. Stone, crushed, in bulk in open top cars, C. L. Establish on, from Marble Cliff, O., to Clothier, W. Va., 198c; Wayne, W. Va., 176c per net ton.

71723. Stone, crushed and screenings, C. L. Establish on, from Latrobe, Penn., to Aliquippa, Penn., Wheeling, W. Va., Youngstown, O., 121c; Ashtabula, O., 143c; Niagara Falls, N. Y., 220c per net ton, subject to increase provided in the tariff of the increased rates and charges No. X-148.

71736. Common lime, including magnesium lime, hydrated or hydraulic, quick or slacked, C. L., in bulk, min. wt. 100,000 lb. Establish on, from Wyandotte, Mich., to Detroit (Dearborn Station), Mich., 5c, plus Ex Parte 148 increase.

71934. Industrial sand, as described in Item 200E, C. F. A. L. Trf. 575A. Establish on, from the so-called Evansville group to Mt. Savage, Md., rates as shown below via Sou. Ry., New Albany, Ind., B. & O., Cumberland, Md., C. & P. Ry.:

Rates on I. C. C. Docket 22907 Basis—Rate basis, 627; proposed rates (net ton), (a) 374, (b) 414, (c) 374; present rates, class or combination.

Note: Rates from E. & O. V. stations 10c per ton of 2000 lb. higher than from Rockport, Ind.

Above rates subject to Ex Parte 148 increase.

71949. Stone, fluxing, furnace or foundry, melting or refractory (unburned), in bulk, in open top cars, C. L. (See Note 3). Establish on proposed rates (in cents per gross ton):

From Bessemer, Penn.:	
To	*Proposed
Donora, Penn.	80
Farrell, Penn.	92
Mingo Jct., O.	92
Youngstown, O.	92
From Mifflin Jct, Penn.:	
To	*Proposed
Mingo Jct., O.	92
Donora (Baird), Penn.	80
From Rankin, Penn.:	
To	*Proposed
Farrell, Penn.	92
Youngstown, O.	92

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

LOW COST SCREENING OF GYPSUM ROCK



FIRST STEP IN
**Gold
Bond
PROCESS**

● The Savannah, Georgia, plant of the National Gypsum Co. converts 500 tons of gypsum rock into "GOLD BOND" Special plaster and plaster board every 24 hours. After the first crushing, most of this material is screened by a Link-Belt 2-deck vibrating screen. For 2½ years, a veritable torrent of crushed rock has poured through this screen, which has given continuous trouble-free operation at rock-bottom cost. As in numerous similar installations, the rugged, simple design of the Link-Belt vibrating screen has proved the answer to economical production.



◆ **ASK FOR THIS BULLETIN**
Read full details of features of Link-Belt Vibrating Screens that assure smooth, low cost performance. Ask for Bulletin No. 1762.

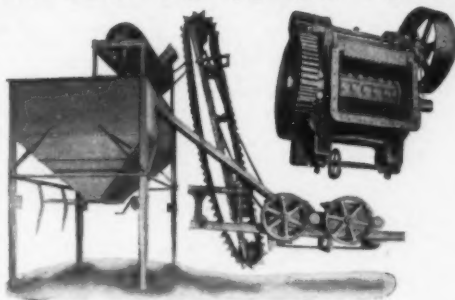
LINK-BELT COMPANY 2000
2045 W. Hunting Park Ave., Philadelphia

WRITE
TODAY!

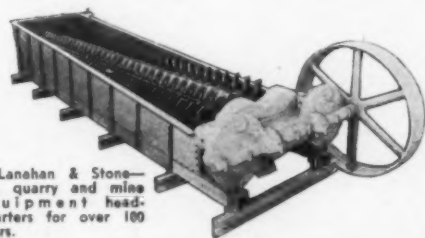
LINK-BELT
Vibrating Screens

McLANAHAN

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McLanahan equipment will prepare your plant for more business. Single and double roll and jaw crushers, hammermills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, and hoists—complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.



McLanahan & Stone—
pit, quarry and mine
equipment head-
quarters for over 100
years.

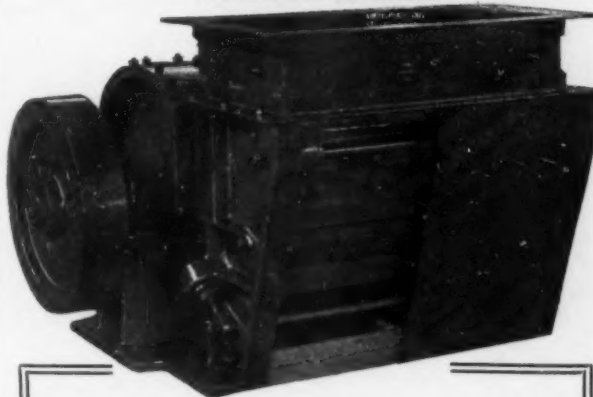
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McLanahan & Stone Corp.

Established 1835
HOLLIDAYSBURG,
PENNSYLVANIA

★ **ALERT** Producers are **AMERICAN** users



AMERICAN Crushers are proving to thousands they are designed to produce efficiently under the stress of war production.

You can be sure of continuous production with low maintenance cost, high output and low power consumption with AMERICAN.

Write for catalog or special data.

AMERICAN PULVERIZER CO.
1148 MACCLIND AVE. ST. LOUIS, MO.

AKINS
Classifiers

HAVE MARKED
ADVANTAGES
FOR
SAND PLANTS



1. Give you close separation for any desired specifications;
2. Big tonnage - low power cost;
3. Start without unloading -- very important if you run less than 24 hour shifts;
4. Mechanical simplicity.

Simplex or duplex - 16" (spiral dia.) up.
Write for Bulletin 24 HA and state your specific sand washing problem.



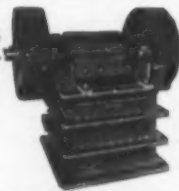
COLORADO IRON WORKS CO.

Main Office & Works - Denver, Colo., U. S. A.

"Established in 1885"
STATIONARY OR MOBILE
ROCK CRUSHERS
 For Military Highway, Access Roads and
 Army & Navy Air Base construction
FREE—Write for Catalog No. 601

**JAW
CRUSHERS**
 Bronze or Roller
 Bearing

Heavy armor plate
 steel or cast steel.
 Heavy Duty
 Construction
 Large capacity
 Small power
 Requirements



Self Traveling Tractor

**JAW
CRUSHERS**

Ideal for
 maintenance
 road work



**SINGLE and DOUBLE
ROLL CRUSHERS**

For Secondary
 Crushing
**DOUBLE
ROLL
CRUSHERS**
 From 18" to 40"
 Diameter

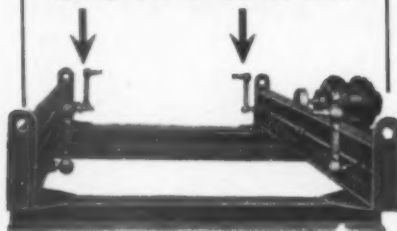


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 Our Complete Line of Roll Crushers

GRUENDLER
 CRUSHERS - PULVERIZERS - GRINDERS

GRUENDLER CRUSHER & PULVERIZER CO.
 2920-28 N. Market St., St. Louis, Mo.

CONTROL!



**And Control Means
Efficiency Always**

This patented equalizer assembly connects the body to base frame and enables you to accurately CONTROL the circular throw of a SECO vibrating screen. You are always sure of getting maximum efficiency.

SECO
 Vibrating Screens

Screen Equipment Co.

From Universal, Penn.:

To
 Farrell, Penn. *Proposed 92
 Youngstown, O. 92
 *Proposed rates to expire six months
 from date of publication, and subject to
 Ex Parte 148 increase.

72021. Sand, all kinds and gravel, C. L. Establish on, from Beaver, O., to R. A. Junction, O., 66c, plus Ex Parte 148 increase.

72215. Sand (Industrial) and gravel, in open top equipment, C. L. (see Note 1 below). Establish on, from Chardon, O., to Natrium, W. Va., 176c per net ton, via B. & O. R. R., subject to Ex Parte 148 increase. (See Notes 1 and 6.)

72229. Limestone, agricultural, unburnt, C. L., min. wt. 50,000 lb. Establish on, from Gibsonburg and Woodville, O., to McClainville, O., 198c net ton, subject to Ex Parte 148 increase.

72245. Industrial sand, usual description. Establish on, from the so-called Paines group, viz.: Paines and Hemlock, Mich., in open cars, to Adrian, Kalamazoo, Mich., 138c; Lapeer, Mich., 99c; Muskegon, Mich., 127c; Port Huron, Mich., 116c; South Haven, Mich., 149c; Sparta, Mich., 116c; in closed cars, to Adrian, Kalamazoo, Mich., 176c; Lapeer, Mich., 132c; Muskegon, Port Huron, Mich., 165c; South Haven, Mich., 187c; Sparta, Mich., 154c per net ton, subject to Ex Parte 148 increase.

72253. Sand (Industrial), or gravel, in open top equipment, C. L. Establish on, from Akron, O., to Victory, Pa., 121c per net ton, subject to Ex Parte 148 increase, via B. & O. R. R.-New Castle, Pa.-P. R. R.

Southern

29018 (carrier). Stone, crushed, in open-top cars, C. L., 90,000 lb. Cancel rate of 95c net ton from Lassiter, N. C., to Hitch, Kelford, Felton, Maparr, Aulander, Earley, Ahoskie, Duke Hall, Cowan, Eure, Sarem, Gates, Truitts and Drum Hill, N. C., published in Item 27920, Supp. 26-I, A. C. L. R. R. Tariff 91-20.

29030 (shipper; suggested by carrier). Stone, marble or granite, crushed, C. L., 100,000 lb. Establish 325c net ton., Mt. Airy, N. C., to Bridgeville, Dagsboro, Delmar, Ellendale, Frankford, Georgetown, Harrington, Laurel, Milford, Millsboro, Del., Oak Hall, Va., Pocomoke, Md., and Seaford, Del.

29031 (carrier). Cancel rates on sand, C. L., from Talbird, N. C., to Greensboro and Durham, N. C., and on sand and gravel, C. L., from Bunlevel Pit, N. C., to Greensboro, N. C., published in N. S. Ry. Rate Issue 395.

29041 (carrier). Sand, in open-top cars, C. L. Cancel rate of 102c net ton from Kay, N. C., to Newport News and Norfolk, Va., published in A. C. L. R. R. I. C. C. B-2985.

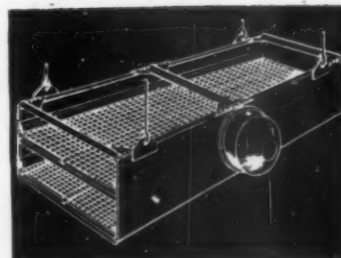
29042 (carrier). Stone, C. L. Cancel rate of 80c net ton from Lassiter, N. C., to Fayetteville, N. C., published in A. C. L. R. R. I. C. C. B-2985.

29059 (carrier). Crushed stone, C. L. Cancel rate of 80c net ton from Neverson and Rockton, N. C., to Fayetteville, N. C., published in N. S. Ry. Rate Issue 395.

29060 (shipper; suggested by carrier). Ground limestone, C. L. Establish from Sherwood, Tenn., to Shreveport, La., 324; Crowley, La., 368; Lake Charles, La., 379; Eunice, La., 357; Oklahoma City, Okla., 401; Tulsa, Okla., 368; Beaumont, Tex., 401; Dallas, Tex., 390; Port Worth, Tex., 401; Galveston, Houston, Tex., 423; San Antonio, Tex., 473; Kansas City, Mo., 368c net ton.

29079 (carrier). Sand, C. L. Cancel rate of 95c net ton from Goldsboro, N. C., to Four Mile and Greensboro, N. C., published in Items 7100-A and 7120-A, S. F. T. B. Tariff 389-E.

29082 (shipper; suggested by carrier). (a) Asphaltic limestone (natural), C. L. Establish from Margerum, Cherokee and Colrock, Ala., to Chicago, Western Springs, Eola, Aurora, Ill., 297c; Morton Grove, N. Chicago, Waukegan, Upton and Rond-



**GYROSET
VIBRATING SCREEN**

**5 DISTINCTIVE
FEATURES . . .**

1. Full Floating Shaft.
2. Eight Positive Stroke Adjustments (quickly changed).
3. Oil Lubricated.
4. Sturdy Construction.
5. Screen Cloth Easily Changed.



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ECONOMICAL

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Productive Equipment Corp.
 2926-28 West Lake St., Chicago, Ill.

**H & K
PERFORATED
METAL
SCREENS**

**MAKE YOUR
SCREENING SURFACES
MORE EFFECTIVE**

By having the perforations properly spaced to give greatest capacity and durability, H & K screens are designed to provide largest amount of open area without loss of strength. Any size, any shape, any metal, any perforation.

Send for illustrated catalog.

**The Harrington & King
PERFORATING CO.**

5850 Fillmore St., Chicago—114 Liberty St., N. Y.

out, Ill., 308c net ton. (b) Asphaltic limestone (processed), C. L. Establish from Margerum, Ala., to Chicago, Western Springs, Eola, Aurora, Ill., 352c; Morton Grove, N. Chicago, Waukegan, Upton and Rondout, Ill., 363c net ton.

29722. Crushed or ground limestone, also ground shale, Kansas, Missouri and Oklahoma, to Colorado, Kansas, Nebraska and Oklahoma. To cancel rates published in Items 1500 to 1690, inclusive, AT&SF Tariff 15528, from Dewey, Okla.; also all rates published in Items 1700 to 1730, inclusive, and Item 1750 of the same tariff.

Southwestern

29602. Silica gel (silica treated with sulphuric acid), Baltimore, Md., to Baytown, Tex. To establish rate of 72c per 100 lb., subject to Ex Parte 148 increase, on silica gel (silica treated with sulphuric acid), in bags, drums or in bulk, C. L., min. wt. 50,000 lb., from Baltimore, Md., to Baytown, Tex.

29607. Sand, gravel, etc., Southwest to Missouri. To provide an exception in S. W. L. Tariff 162-R in connection with rates on sand, gravel and other articles named therein from various origins in that tariff to certain Missouri destinations to the effect that the rates will apply through stations in the State of Illinois via the line of the St. L. S. W. from Thebes, Ill., to East St. Louis, Ill.

Illinois

IRC 2392-4. Crushed stone, C. L., min. wt. 90 percent of marked capacity of car, from Thornton, Ill., to T. P. & W. R. R. stations, Cuba to La Harpe, Ill.

(Rates in cents per net ton)

To (T.P.&W. stations)	Pres.	Prop.
Cuba, Ill.	180	147
Smithfield, Ill.	195	161
Seville, Ill.	195	161
New Philadelphia, Ill.	195	161
Bushnell, Ill.	195	161
Good Hope, Ill.	195	161
Scioto, Ill.	208	161
Blandinsville, Ill.	208	167
LaHarpe, Ill.	208	167

Subject to Ex Parte 148 increases.

Trunk Line

41176 (shippers). Limestone, crude, fluxing foundry and furnace, C. L. (See Note 3), from Bellefonte, Penn., to Luke, Md., \$1.85 per gross ton, in lieu of current commodity rate of \$2.16 per gross ton. Reason: (See Note 5.)

41180 (shippers). Limestone, unburnt, ground or pulverized, C. L., min. wt. 60,000 lb., from Muncy, Penn., to Indianapolis, Ind., \$3.80 per net ton, in lieu of current 6th class rate of 36c per 100 lb. Reason: (See Note 5.)

41188 (shippers). Limestone, ground or pulverized and/or stone dust, C. L., minimum weight 60,000 lb., from Riverton, Va., to Wampum, Penn., \$2.59 per net ton, in lieu of current class rates. Reason: (See Note 5.)

41191 (Increase—carriers). To cancel commodity rates on crushed stone from Marlboro, Tompkins Cove and West Nyack, N. Y., and rates on sand and gravel, C. L., from Marlboro, N. Y., to stations on the Erie R. R., N. J. & N. Y. R. R. and N. Y. S. & W. R. R., as published in NYC RR tariffs ICC Nos. 342 and 416. Reason: (See Note 4.)

41236 (shippers). Limestone, crude, fluxing, foundry and furnace, C. L. See Note 3, from Coburn, Pa., to the following stations in lieu of current 6th class rates: Pittsburgh, Pa., \$1.16; Neville Island, Pa., \$1.16; Monessen, Pa., \$1.16; Donora, Pa., \$1.16; Beaver Falls, Pa., \$1.39; Midland, Pa., \$1.39; Weirton, W. Va., \$1.39; Steubenville, O., \$1.39; Follansbee, W. Va., \$1.39; Buffalo, N. Y., \$1.79; Lowellville, O., \$1.62; Wheeling, W. Va., \$1.51; Farrell, Pa., \$1.62; Struthers, O., \$1.62; Sharon, Pa., \$1.62; Youngstown, O., \$1.62; Sharpsville, Pa., \$1.62; Niles, O., \$1.62; Warren, O., \$1.62; Alliance, O., \$1.79, being rates per gross ton. Reason: See Note 5.

PULVERIZERS for the reduction of Cement Materials, Limestone, **Agricultural Limestone**, Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour

Finenesses: 20 to 350 mesh

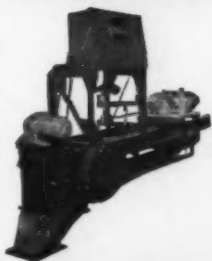
BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
To Insure an Absolutely Uniform Product—

Use the **BRADLEY AIR SEPARATOR**

What rate per hour? What weight per day?



The Feedweight Gives the Answer

Feeding, proportioning and batching—entirely automatic. The result—finished products of uniform quality with minimum manufacturing costs. The FEEDWEIGHT correctly and uniformly feeds material by weight. In addition, an automatic totalizer will give you the exact total weight of all material so fed. It is a machine of unexcelled accuracy. Eliminate guesswork in your plant.

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FULL FLOATING CIRCLE THROW SCREEN

Coarse and Medium Sizes
Live Rubber Mountings
No Escaping Vibration

The W. S. Tyler Company
CLEVELAND, OHIO, U. S. A.

**HIGH
TONNAGES
OF ROCK**

THE ROSS FEEDER

Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.

High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

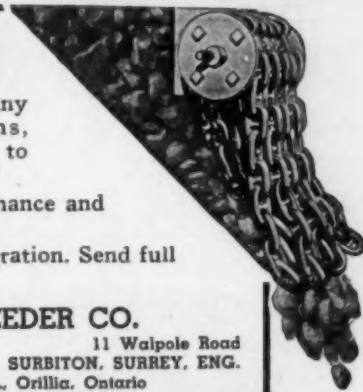
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NEW YORK, U. S. A.

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SURBITON, SURREY, ENG.

Canadian Licensee: E. Long, Ltd., Orillia, Ontario



OBITUARIES

DAVID ROY WATSON, salesman for the Canada Crushed Stone Corp., Ltd., Hamilton, Ontario, Canada, died recently at the age of 50. He had been with the firm since 1907, when it was known as Doolittle and Wilcox, Ltd., continuing with the organization when it became the Canada Crushed Stone Corp. He had served in various capacities and was an excellent salesman, being an authority in his particular line of business and possessing an interesting and lively personality.

LOADER VALUE

is in what it costs per yard per 100,000 yards. On that basis a HAISS will prove out to cost you less than anything else we know of... Write for catalog.

2-3-5 and 8 YD.
CAPACITIES



GEO. HAISS MFG. CO., INC.
HAISS

Park Ave. & 143rd Street, New York, N. Y.

GEORGE S. DAVISON, prominent Pittsburgh engineer, a past-president and honorary member of the American Society of Civil Engineers, and vice-president of the Green Bag Cement Co. of West Virginia, died recently at the age of 86. A civil engineering graduate of Rensselaer Polytechnic Institute in the class of 1878, Mr. Davison spent four years on railroad work in the Midwest before going to Pittsburgh in 1882 as chief engineer of the Pittsburgh, Chartiers and Yougheogeny Railroad. From that time on his interest centered in Pittsburgh and he took a leading part in civic developments involving engineering questions, notably rapid transit and flood control. In 1904 his interest turned to oil and he joined the Gulf Refining Co., ultimately becoming its president. In the latter part of 1906 he initiated construction by the company of its 500-mile pipe line from Tulsa, Okla., to the Gulf at Port Arthur, Texas. At the time of his death, Mr. Davison was chairman of the board of the Pittsburgh Coke and Iron Co., and continued to take an active interest in the affairs of that company and of several others of which he was a director.

WINIFRED KIDD BLISS, wife of W. A. Bliss, director of Dravo Corp. and manager of the Keystone Sand Division, Pittsburgh, Penn., died recently, after a long illness. Mrs. Bliss was well known in the sand and gravel industry and had attended every convention prior to the last one. At the 1931 convention in Pittsburgh, she was chairman of the Women's Entertainment Committee.

NORMAN GILPIN SMITH, vice-president of the Consolidated Feldspar Corp., Trenton, N. J., died recently at his home in Brunswick, Me., at the age of 70, after a short illness.

CHARLES LOUIS MCKENZIE, president of the Concrete Products Co. of America and the Land Improvement and Supply Co., Pittsburgh, Penn., died recently at the age of 73. Mr. McKenzie was formerly president of the Duquesne Slag Products Co., but retired from the organization several years ago. He was born in Montrose, Penn., and graduated from Lehigh University. From 1895 to 1900 he was associated with the Shiffler Bridge Co., when he became president of the Pittsburgh Construction Co. upon its organization by the late J. W. Walker. During the next 20 years Mr. McKenzie organized and was president of slag, concrete and supply companies, all of which were subsidiaries of the Pittsburgh Construction Co. He was president of the National Slag Association for many years, the Engineers Society of Western Pennsylvania and the American Iron and Steel Institute of New York.

W. W. FISCHER, president, Fischer Lime and Cement Co., Memphis, Tenn., died recently at the age of 62. At one time Mr. Fischer was head of the Greenville Sand and Gravel Co.; Central Sand and Gravel Co.; Camden Gravel Co., and the Williford Crushed Stone Co. He also headed the Batesville White Lime Co., Batesville, Ark. Mr. Fischer was widely known throughout the sand and gravel industry, and was a prominent figure in the civic activities of Memphis.

PHYLLIS R. EARNSHAW, wife of George M. Earnshaw, who has been on the staff of ROCK PRODUCTS for twenty years, died November 10, after a long illness. She is survived by her husband, two sons, Richard N., and George Philip; a brother, Paul Norrington; and her father, A. W. Norrington.

W. A. STUBBLEBINE, a pioneer in the field of pulverized-coal firing, and associated with the Babcock and Wilcox Co., New York, N. Y., died recently at the age of 67. He was born in 1875 in Bethlehem, Penn., where he later graduated from Lehigh University. Mr. Stubblebine began his career with Bethlehem Steel Co. in 1895. In 1909 he went with the Fuller Lehigh Co., Fullerton, Penn., where he was active in the development of pulverized-coal firing and furnace construction. In 1923 he transferred to the Trumbull Steel Co., Warren, Ohio, where he had charge of one of the pioneer pulverized-coal-fired boiler plants. This installation gained a world-wide repu-

Don't Scrap it - WELD IT

It's patriotic, as well as good business, to repair parts instead of scrapping them. By salvaging tractor parts, buckets, dipper teeth, frogs, crossings—roll, gyratory, jaw crushers, you take one more load off plants doing war work.

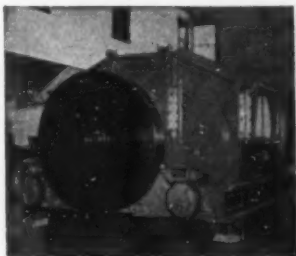
Repair your broken and worn parts with Manganal—it's the easy, quick and efficient way. Manganal alloy steel welding, wedge bars and chases give new lives to old parts.

STULZ-SICKLES CO.
NEWARK, N. J.



ANOTHER "PENNSYLVANIA" REVERSIBLE HAMMERMILL

ready to "go on the line" in a new Cement plant designed for top efficiency in every Department.



- Major crushing by smashing impact
 - Automatic hammer turning
 - Product sizing control, and wear compensation, assured by Duplex cage adjustments
 - Reduced power demand
 - Sharply cut maintenance cost
- are some of the outstanding advantages which this REVERSIBLE Hammermill will provide in the Secondary Preparation for modern Raw Side Grinding Mills.

Send for Bulletin No. 1030, and PUT YOUR REDUCTION PROBLEMS UP TO US.

PENNSYLVANIA
CRUSHING COMPANY

Liberty Trust Bldg.
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**WON'T QUIT
OR CAUSE TIME OUT**

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.

PERFORATED METAL SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications
Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

CHICAGO PERFORATING CO.
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CHICAGO, ILLINOIS
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UNIVERSAL SCREENS

and
"UNIVIBE" RIDDLES

Complete line of—
Tried, Proved and Guaranteed
Vibrating Screens. Since 1919, the
BEST in screening equipment at
the LOWEST COST.

NEW! 32-page Catalog on Screens and Screening. Just ask for Catalog No. 107.

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RACINE - WISCONSIN

RYERSON CERTIFIED STEELS

10 Strategically-Located Steel-Service Plants

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structural, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

WILFLEY centrifugal SAND PUMPS



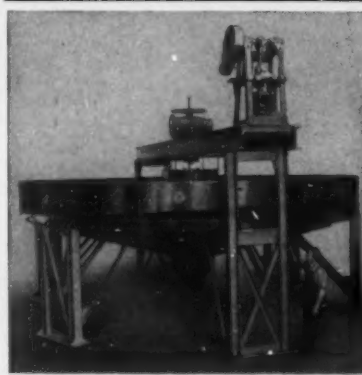
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Save Pumping Cost

Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy

pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. Write for Complete Catalog

A. R. WILFLEY & SONS, Inc. Denver, Colo., U. S. A.
NEW YORK OFFICE: 1775 BROADWAY



DENVER HYDRO-CLASSIFIER

The Denver Hydroclassifier is designed for fine sizing and de-sliming problems where it is essential to reduce materials to sizes minus 200 mesh to 10 microns. Enclosed integral lift vertical worm gear drive makes it easy to raise rakes. The spiral rakes convey material to center cone in shortest time. Ask us how these machines will save you money. Write for bulletin No. C4A-B.

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EFFICIENT — DEPENDABLE — ECONOMICAL

The Jeffrey Manufacturing Company
935-99 North Fourth Street Columbus, Ohio

tation, and Mr. Stubblebine became well known as its operator. In 1927 he returned to the Fuller Lehigh Co. which had been acquired by the Babcock & Wilcox Co. Since 1931 he had been located in New York, where he was active in the design and operation of pulverized-fuel installations.

Manufacturers' News

Wickwire Spencer Steel Co., New York, N. Y., has appointed George L. Randall as public relations manager, in addition to his duties as advertising manager. Mr. Randall has been with the company seven years. Prior to that he was with G. Schirmer's, music publishers, and Warner Bros.-First National Pictures.

Babcock & Wilcox Co., New York, N. Y., announces that Ferry R. Cassidy, former executive assistant, is now Lt. Colonel in the Engineer Corps of the U. S. Army. He was a Captain in the Coast Artillery in World War I, his last assignment being at the school for Anti-Aircraft Officers at Fort Monroe. He began his service with Babcock & Wilcox in 1916 and was appointed a vice-president of Fuller Lehigh Co. in 1928. Upon the consolidation of Fuller Lehigh with Babcock & Wilcox he was made an executive assistant of the latter company, holding that position until entering the Service.

Chain Belt Co., Milwaukee, Wis., reports that A. W. Thomas, sales manager of the construction machinery division, has gone to Washington, D. C. as consultant for the Construction Machinery Division of

the War Production Board. During his absence, his duties will be taken over by D. A. Kalton, assistant sales manager.

Link-Belt Speeder Corp., Chicago, Ill., has issued the second in a series of articles on the upkeep of shovels, draglines and cranes, entitled "A Routine of Daily Inspection Will Enable Your Equipment to Do More—and Last Much Longer."

Universal Crusher Co., a Delaware corporation, with factories and general offices at Cedar Rapids, Iowa, has become the Universal Engineering Co. Officers, executives and personnel remain the same, and nothing is being eliminated from the line of equipment manufactured by the original firm. A. W. Daniels is president; H. F. Rikhoff, secretary-treasurer; A. H. Sargent, vice-president; L. S. Hackney, sales manager, and L. W. Dunlap, assistant to the president.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has appointed Seiden H. (Doc) Gorham as manager of dealer sales, succeeding Stanley J. Retzlaff, who has



S. H. Gorham

taken over the company's trade relations department. Mr. Gorham has been identified with the Allis-Chalmers sales organization since 1933. For the past six years he has been in charge of sales and production. As head of dealer sales, he will supervise approximately 400 dealers throughout the country. Prior to joining Allis-Chalmers, Mr. Gorham spent six years in the sales department of the General Motors

Corp., Buick division, as a member of the factory sales division.

The B. F. Goodrich Co., Akron, Ohio, has named J. T. Callahan western district manager of the company's national sales and service division, with headquarters in Chicago, Ill.

The Marmion-Herrington Co., Inc., Indianapolis, Ind., has elected Bert Dingley as president of the company. A. W. Herrington is chairman of the board of directors.

Pittsburgh Plate Glass Co., Pittsburgh, Penn., has moved the executive sales office of the Columbia chemical division from New York to Pittsburgh. W. I. Galliher, director of sales, will be in charge of sales activities from the new headquarters. Also involved in the transfer are the chemical division's traffic and advertising departments.

Ransome Machinery Co., Dunellen, N. J., was formerly known as the Ransome Concrete Machinery Co. The company will continue to manufacture the same products with which it has been identified in the past. No changes in the management personnel have been made.

New Incorporations

General Quartz Laboratories, Inc., Yonkers, N. Y., has been organized to process quartz and other crystals with a capital of \$40,000. Hyman Sidelle, 302 Broadway, New York City, is the agent.

Southwest Minerals, Inc., San Benito, Texas, has been incorporated with a capital stock of \$10,000. Incorporators are J. R. Fitzgerald, Prentess P. Edmiston, and James D. Ward.

American Minerals, Inc., Spruce Pine, N. C., has been incorporated with a capital of \$100,000. Paul Henline is the agent.

WE SPECIALIZE IN NEW AND REBUILT EQUIPMENT

We proudly serve many of America's leading industrial plants now engaged in producing the vital war materials so necessary to the success of our armed forces.

KILNS, COOLERS, DRYERS

CRUSHERS, TUBE MILLS,

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Write us regarding the equipment you seek

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TEAM UP FOR VICTORY with "CONSOLIDATED"

20" GYRATORY CRUSHER USED ONE YEAR ON SLATE

1—20" Allis-Chalmers Superior McCully Gyratory Crusher, feed opening 20" wide, capacity 135 t.p.h. on 3" setting, 275 t.p.h. at 6 1/2". Shop No. 8311. With or without 125 H.P. 3/60/440 volt slip ring motor and controls.

JAW CRUSHERS

1—22"x50" Champion, all steel frame. Also an assortment of smaller sizes.

CRUSHING ROLLS

1—36" d.x16" Sturtevant Mill Co.
2—40"x16" Colorado Iron Works.
1—42"x16" Allis-Chalmers Anacosta type.
1—30"x30" Jeffrey Single Roll Crusher.

BUCKET ELEVATORS

27' c/c—14x7; 29' c/c—14x7; 40'—7x5; 42'—10x6; 44'—7x5 belt; 70'—16x8; 90'—16x8; 3—100'—7x5, belt; all of these steel encased.

BELT CONVEYORS

5—12" Steel Frame in 15' sections, 4" cross channels, 6" long channels. Link-Belt troughing and return idlers, with anti-friction bearings: 50', 85', 100', 125', 150' centers.
1—24"x106' with wood frame.
1—30"x132' c/c with wood frame, anti-friction idlers.
3—18" Sandvik flat belt conveyors, motor driven, with steel framework: 2—60' c/c; 1—80' c/c.

PAN CONVEYOR

1—24"x65' c/c Jeffrey Steel Pan Conveyor.



CONSOLIDATED PRODUCTS COMPANY, INC.

15-16-17 PARK ROW

NEW YORK, N. Y.

Shops and Yard at Newark, N. J., cover eight acres.

14 ton Vulcan loco, 36" gauge, steam.
1 1/4 Yd. Northwest Shovel Attachment.
1 1/4 Yd. B-Erie 41-B Shovel Attachment.
15 Yd. 3 Comp. Steel Bin.
Erie, 40 ft. crane boom.
3" Electric Pump, 75' head.
Compressors, 350', 500', 650'.
1 1/4 Yd. 36" gauge dump car.
3—12 ton 36" gauge Whitcomb gas locos.
J. T. WALSH
Brisbane Bldg., Buffalo, N. Y.

GUY DERRICK FOR SALE

Steel Guy Derrick with 2 Drum Engine, 30 H.P. Motor, Bull Wheel Swinger Engine 7 1/2 H.P. Motor both 220 Volt. 80 ft. mast, 65 ft. boom—Guy Wires & Hoist Rope—Excellent condition—Ready to go.

KEYSTONE LIME WORKS
KEYSTONE, ALABAMA

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RELAYING RAILS—Super-quality machine-reconditioned—not ordinary Relayers.
NEW RAILS, Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates, all other Accessories. Although our tonnages are not as large as heretofore, most sizes usually available. Every effort made to take care of emergency requirements.
PHONE, WRITE OR WIRE
L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

110 HP Diesel engine and generator.
No. 5 K Allis Chalmers crusher.
No. 3 Austin gyratory crusher.
20" x 18" Dixie hammer mill.
Revolving screen screens.
Large stock electric motors.
10 air compressors.

Wm. C. Johnson & Sons Machinery Co.
1211 Hadley Str., St. Louis, Mo.

FOR SALE

1—Monaghan Steam Dragline, skid and roller, 100' boom, 3 1/2-yd. bucket. Butt-strapped boiler, 10 1/4" x 12" main engine.

Malvern Gravel Company
Malvern, Arkansas

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.
V. M. NUSSBAUM & CO.
Fort Wayne, Indiana

FOR SALE—HOIST

1—Double Drum Sauerman Bros. Hoist with direct Waukesha Gas Engine Drive complete with 1/2 Yard cable way bucket and cable, like new.
Large Steam Pump—Large Steam Air Compressor—Guaranteed Used Pipe—Steel Buildings—Tanks of all kinds and sizes.

JOS. GREENSPON'S SON PIPE CORP.
Nat'l Stock Yds. (St. Clair Co.) Ill.

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4' x 7', Deister, Double Deck.
Motor driven.

Rebuilt—Attractive Price.

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P. O. Box 1647, Pittsburgh, Pa.
Warehouse: Carnegie, Pa.

FOR SALE

1—Block Machine 8" x 8" x 16" with 850 Cast Iron Pallets.
1—Face down Ideal Machine 8" x 12" x 16" with 500 Pallets.
600 8" x 8" x 16" Ideal Cast Iron Pallets.

Write or call for price to
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FOR SALE

One complete lime hydrating plant, including five ton hydrator, a 10' Raymond Separator, a No. 0 Raymond Automatic Pulverizer, cyclone, piping, etc.

For details, address Box No. A-80

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Factory Reconditioned

"PENNSYLVANIA'S"

2—BX-4 Hammermills STEELBUILT.
2—18"x24" Single Rolls STEELBUILT.
1—21"x40" Single Roll STEELBUILT.
These units are available on low Priority. Prompt shipment. LET US KNOW YOUR REQUIREMENTS.
Pennsylvania Crusher Co., Phila., Pa.

CONSTRUCTION TYPE ELECTRIC LOCOMOTIVES

2—4 Ton WESTINGHOUSE, 250 V., 36" Ga., Equipped with 902-C Motors, and complete with Motor Driven Cable Reels.

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EQUIPMENT CORPORATION OF AMERICA

WE SERVE 4 WAYS

BUY	REBUILD
SELL	RENT

4

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EVERYTHING LISTED IS IN OUR
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RUBBER BELTING

FRICITION SURFACE TRANSMISSION BELT-
ING CARRIES OUR CELEBRATED
BRAND "TECO"

Width	Ply	Width	Ply
1 to 48 inch.....	3	1 to 48 inch.....	6
1 to 48 inch.....	4	1 to 48 inch.....	8
1 to 48 inch.....	5		

ELEVATOR AND CONVEYOR BELTING

FRICITION SURFACE BRANDED "TECO"

Width	Ply	Width	Ply
6 to 48 inch.....	3	10 to 48 inch.....	6
6 to 48 inch.....	4	12 to 48 inch.....	8
10 to 48 inch.....	5		

RUBBER COVERED CONVEYOR BELTING

BRANDED "I'M GOOD"

Width	Ply	Top	Pulley
12	4	3/32	1/32
14	4	3/32	1/32
16	4	3/32	1/32
18	4	3/32	1/32
20	4	3/32	1/32
24	4	3/32	1/32
18	4	1/2	1/32
24	5	1/2	1/32
30	5	1/2	1/32

"ROCKWOOD" V BELTS

ALL TRANSMISSION SIZES IN STOCK

Multiple Groove A Matched Sets

Multiple Groove B Matched Sets

Multiple Groove C Matched Sets

Multiple Groove D Matched Sets

Multiple Groove E Matched Sets

Fractional Horse Power F B

Fractional Horse Power F B

BUY ONLY BRANDED BELTING FOR SERVICE
30,000 IRON AND STEEL PULLEYS

ALL SIZES TO 64x20" INCLUDING

20-58x12 Cr. Steel Sp. 580-20x6 Cr. Steel Sp.

19-50x10 Cr. Cast Solid 800-30x4 Cr. Steel Sp.

10-42x10 Cr. Cast Solid 400-12x4 Cr. Steel Sp.

20-38x10 St. Steel Sp. 200-8x3 Cr. Cast Solid

200-28x8 St. Steel Sp. 200-8x3 Cr. Cast Solid

USED DROP HANGER FRAMES ONLY

No. Drop Size Price No. Drop Size Price

75 1-11/16 \$3.25 18 12 2-7/16 \$4.40

200 18 1-15/16 4.25 15 14 2-7/16 5.50

30 20 1-15/16 5.00 60 16 2-7/16 6.00

20 22 1-15/16 5.65 48 18 2-7/16 6.50

50 24 1-15/16 6.35 70 20 2-7/16 7.00

8 27 1-15/16 7.50 400 22 2-7/16 8.00

40 18 2-3/16 5.00 500 24 2-7/16 8.50

200 20 2-3/16 6.00

HANGER BEARINGS—USED AND NEW

750 Hyatt 1-15/16..... \$5.00 ea.

100 Hyatt 2-7/16..... 7.50 ea.

25 S.K.P. 1-15/16..... 5.00 ea.

20 S.K.P. 2-7/16..... 10.00 ea.

NEW

Size Shaft 1-3/16 1-7/16 1-11/16 1-15/16

Hall Bearing \$11.50 \$12.00 \$13.50 \$15.00

Ring Oiling 2.40 2.90 3.30 3.15

2000 FLAT BOXES—ALL SIZES

1600 PILLOW BLOCKS—ALL SIZES

SPROCKET WHEELS

CAST IRON MOULDED—ALL SIZES

CUT IRON AND STEEL—ALL SIZES

SPROCKET CHAIN—STATE YOUR WANTS

V GROOVE SHEAVES

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No. 1st—O.D. 2nd—Groove 3rd—V-Belt 4th—

Price 5th

1-3/8x3-A \$ 3.00 1-9/16x2-C 11.50

1-4x1-AB 1.75 1-9/16x2-C 13.90

1-4x3-A 3.00 1-9/16x2-AB 5.95

1-4x4-A 3.65 1-9/16x2-C 16.35

1-4x1-AB 1.85 1-9/16x2-AB 12.65

1-4x3-A 2.15 1-10x2-C 11.65

2-4x3x2-O 2.10 1-10x2-B 4.65

1-4x2-AB 2.70 1-10x2x2-AB 5.50

1-4x1-AB 1.80 1-10x2x2-AB 6.70

1-4x2-AB 4.85 1-11x2-C 12.50

1-4x3-AB 5.75 2-12x2-C 13.15

1-5x2-AB 3.10 1-15x2-C 16.25

1-5x3-AB 3.70 1-16x2-A 9.05

1-5x3-AB 3.80 1-19x2-D 43.70

2-5x2-AB 3.30 1-19x10-D 70.25

1-4x1-AB 2.35 2-10x2-C 18.50

1-4x2-AB 3.50 1-20x2-A 17.00

2-4x2-AB 4.15 4-21x2-C 20.75

1-4x2-AB 8.75 3-22x2-C 22.50

1-4x4-AB 5.50 4-22x2-C 24.75

1-7x1-AB 2.05 3-31x2-AB 16.35

1-7x4-AB 6.25 3-31x2-AB 23.75

1-9x2-AB 4.65 1-37x2-C 48.00

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BALL BEARING—RECONDITIONED

No. Size Price No. Size Price

1-3x2x1-7/16 \$ 9.50 1-12x2x1-15/16 \$15.50

3-8x4x1-7/16 0.60 5-10x4x1 12.00

1-10x4x1-11/16 10.65 1-20x2x1-15/16 20.00

2-10x2x1-7/16 12.00 10-18x2x1-15/16 19.00

1-11x2x2-7/16 12.50 3-24x3 20.50

1-12x4x1-7/16 10.00 1-15/16

1-12x2x1 12.50

50 USED SPEED REDUCERS

Right Angle—Ratio 30 to 1—2 H.P.—Max.

Input Speed 500—Steel Worm, Bronze Wheel

\$10.00 Each. Lower Price for 10 or More.

GENUINE RABBIT METAL TURBO NICHOL

HARDENED HIGH SPEED AND/OR HEAVY

DUTY 7½ LB. MARINE—MEDIUM SPEED

HEAVY SHOCK AND DUTY 6½ LB.

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REQUESTING CATALOG

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806 N. SECOND ST. LOUIS, MO.

"THE TEST OF TIME SINCE '99"

RECONDITIONED TRUCK MIXER FLEET

- 6—4-yard Jaeger Truck Mixers mounted on A.C. Mack Trucks.
- 2—3-yard Blaw-Knox Truck Mixers mounted on B.F. Mack Trucks.
- 4—12-yard Steel Dump Bodies with Hoists.
- 4—2-yard Separate Engine Drive Jaeger Mixers, mounted on 1936 E.H. Mack Trucks.
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ALL THESE MACHINES NOW WORKING

IMMEDIATE DELIVERY

WILL CONSIDER MINIMUM 6-MONTH RENTAL

Wire, phone our expense

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Banane 27E Dual Drum Paver, rebuilt.

R.K. 325 bbl. Bulk Cement Bin, weigh batcher.

Butler 120 yd. 3 comp. bin with weigh batcher.

H.K. 50 ton. 2 comp. bin with weigh batcher.

Fuller Kinyon bulk cement unloader, portable.

Fuller C40 rotary air compressor, electric.

Hex Pumperete Model 200 with 750' pipe.

Hex Pumperete Model 198 with pipe.

Hex Pumperete Model 180 with 600' pipe.

Smith 27E Pave with 40 foot Tower.

SPECIALS!!!

Allis Chal. Model L Tractor with 12' bulldozer.

Allis Chal. Model K Tractor with bulldozer.

Cletrac Model 80 Diesel Tractor with 12 yd.

Derrick Boat equipped with 20 ton Wiley Whirley.

100' bm., 12 x 12 Steam Hoist. Hull 83 x 114

x 16'.

Butler 16 cu. ft. Asphalt Pug Mill.

2-Misc. Stiff-log Derricks, 10 tons, 100' bm.

5-Misc. Stiff-log Derricks, 15 tons, 110' bm.

Hardinge Conical Ball Mill, 4½'x16'.

Sullivan Compressor, 1031 cu. ft., P.M. engine.

American Compressor, 425 CFM, 50 lb. pressure.

Allis-Chalmers cent. pump, electric, 3500 GPM.

Worthington 8" cent. Bronze impeller, elec. port.

Previews Pump 10" P.T. cent. 200 HP AC motor.

Vertical Boiler, 50 HP, A.S.M.E. 125 lb. pressure.

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Gyratory crushers: K.V.R. 30, 37-8, 49; Telsmith

32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".

Jaw: 6x12, 9x16, 10x20, 14x24, 12x26, 13x30,

14x30, 14x32, 50x84.

Complete Rock Crushing Sand & Gravel Plants.

BUCKETS—STONE SKIPS

1½ yd. Williams Clamshell, rehandling.

2 yd. Hayward Clamshell, rehandling.

1-½ yd. Hayward Clamshell Digging.

2-½ yd. Hais rehandling clamshell.

¾ yd. Hais rehandling clamshell.

Erie ¾ yd. Rehandling clamshell.

20-Battleship Buckets, 8 to 3 yds.

SHOVELS—CRANES

Bucyrus Erie Model 1030 electric tunnel shovel.

Bucyrus Erie 50R Steam Shovel, 2 yds.

Marion Model 480 Steam Shovel, 2 yds.

Universal 7½ ton Truck Crane, pneu. on Mack.

Marion Model 32 Steam Shovel, 1½ yds. cap.

Ind. Brownhoist 10 ton Cat. Crane, gas.

Brownhoist 5-7½ ton Crane, gas.

Universal 6 ton Truck Crane, solid tires.

Northwest Model 105 Gas Crane, 60' boom.

LOCOMOTIVES—CARS

Vulcan 8 ton, std. gauge, gas.

Plymouth 8 ton, std. gauge, gas.

Whitcomb 4½ ton, std. gauge, gas.

2-Vulcan 8 ton, gas, 35" gauge.

RICHARD P. WALSH CO.

30 CHURCH STREET NEW YORK

FOR SALE

1 only Allis Chalmers Anaconda
Roll Crusher Size 54" dia. x
24" wide, rolls fitted with
manganese steel shells approx-
imately 4½" thick, complete
ready for operation.

**THE BUFFALO SLAG CO.,
INC.**

866 Ellicott Square Bldg.

BUFFALO, N. Y.

Contact our Purchasing Agent

Gyratory Crushers: No. 19 & 37 Kennedy

4-E, 8-A & 10-B Telsmith, No. 7½ Allis Chalmers,

excellent, with 60' continuous Bucket Elevator.

Jaw Crushers: 30 x 13", 36 x 10", 24 x 36"

Farrell, 15 x 36", Pioneer, 9 x 36" Wheeling.

2-18 x 36" Champion, One Roller bearing.

Double Roll: 30 x 36" & 42 x 16", 30 x 16"

Traylor.

30" x 52" Belt, 2-13" x 20" Chain Bkt. Elevators.

2 Symons Cone Crusher fine bowl.

No. 7 Williams Pulverizer, used one month.

4-4 yard Koppel 36" Ga. Heavy Duty Quarry Cars.

¾ Yd. P&H Model 360A Dragline 35' Boom.

2 Yd. Bucyrus Class 14 Elec. Dragline 100' bm.

100 HP International Diesel Power Unit.

200 HP Buckeye Diesel, 2300 volt Generator.

150 & 350 HP Nat. Gas Generator Sets.

Barber Greene, Hais & Nelson Bkt. Loaders.

Shovels, Cranes, Compressors, Screens, etc.

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GET RID OF IDLE MAN-HOURS



Wake up the loafing man-hours that are lying around in your idle equipment. Sell the equipment to us. We will add some new man-hours in REBUILDING it and then put them all to work on a war job.

FOR SALE

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

LOCOMOTIVES

- 1-7 ton Whitcomb 36" gauge gasoline locomotive, type MO, power gasoline engine.
- 4-7 ton Plymouth type 2, Model D L 24" gauge locomotives power gasoline engines.
- 2-7 ton Whitcomb type MO 24" gauge, power gasoline engines.
- 1-7 ton Plymouth 24" gauge type 2 Model HL power gasoline engine.
- 1-3 1/2 ton Plymouth 24" gauge Model A L 105 gasoline power.
- 1-3 ton Whitcomb 24" gauge type U T gasoline power engines.

SHOVELS AND CRANES

- 1-No. 1 Brownhoist, Ser. No. 10271 with 35' boom.
- 2-B-2 Erie steam cranes with 40' boom.
- 1-No. 2 Northwest shovel, ser. No. 2908, 1 1/2 yd. shovel front.
- 1-M-1. 301 Koehring, ser. No. 544, with 45' boom.

SHOVEL AND PULL-SHOVEL ATTACHMENTS

- 11-ATTACHMENTS
- 1-2 yd. Link Belt K 55.
- 1-1 1/2 yd. Link Belt K 42.
- 2-1 yd. Erie Gas Air GA-2.
- 1-1 yd. Onquad.
- 1-1 yd. North-West 105.
- 1-3/4 P & H 206.
- All above are shovel attachments.
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- All the above are pull-shovel attachments.

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Jack Hammers, Spades, Paving Breakers and Wagon Drills.

PUMPS (Dredging)

- 1-10" Morris sand pump, Ser. No. 86864, cap. 87 cu. yds. per hr.
- 1-8" Cataract dredging pump, Ser. No. 175895, cap. 2000 GPM @ 53' head.
- 1-6" Morris dredging pump, Ser. No. 81802, cap. 1050 GPM @ 53' head.
- 1-6" Morris dredging pump, Ser. No. 180632.

TRACTORS

- 2-Allis Chalmers Mdl. K with Baker Bulldozers.
- 2-Fordson tractors with double drum winches, 4 wheel. One with steel wheels, other solid rubber tires.
- 1-Taylor tractor, mdl. A-16-30, mtd. on 4 steel wheels, with power take off, rated 52 H.P.
- 1-Linn tractor, mdl. 6-28-D, crawlers in rear and solid rubber tired wheels front. Power 100 H.P. engine. Equipped 5 yd. steel dump body.
- 1-Linn crawler tractor, 10 yd. cap. pneu. tires, in front, crawlers in rear.

WAGONS

- 2-Martin Special wagons, with two sets of 4 wooden wheels, steel rims and steel artillery hubs. Cap. 15 tons.
- 1-Wooden body, 2 door dump on 2 wheel trucks. Mfg. Little Red Wagon Co. Body dim. 40" x 26" x 6' 4".
- 4-La Plante Choate all steel 2 door bottom dump wagons mtd. on 4 wheel trucks, capacity 19 tons.
- 2-La Plante Choate all steel 2 door bottom dump mounted on 4 wheel trucks. Cap. 8 tons.
- 2-La Plante all steel two door dump wagons, mounted on 4 wheel trucks. Dim. body 44" x 62" x 36".

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OF AMERICA.

IMMEDIATE SHIPMENT
LOW PRICES

NEW RUBBER

GUARANTEED
HIGH GRADE

CONVEYOR and TRANSMISSION BELTING

CONVEYOR BELTING			TRANSMISSION BELTING			ENDLESS "V" BELTS		
ABRASIVE RESISTANT COVERS			HEAVY-DUTY—FRICTION SURFACE					
Width Ply	Top	Covers	Width Ply	Width Ply	Width Ply	"A"—WIDTH—All Sizes	"B"—WIDTH—"	"C"—WIDTH—"
48"	5/8"	1/16"	18"	6"	6"	"D"—WIDTH—"	"E"—WIDTH—"	
42"	5/8"	1/16"	16"	6"	5"	Sold in Matched Sets		
36"	5/8"	1/16"	14"	6"	4"	RUBBER HOSE		
30"	5/8"	1/16"	12"	6"	3"	ALL SIZES FOR		
24"	5/8"	1/16"	ELEVATOR BELTING			AIR—WATER—		
20"	5/8"	1/16"	HEAVY DUTY RUBBER COVERED			STEAM—SUCTION—		
18"	5/8"	1/16"	Width Ply	Top	Covers	FIRE—WELDING		
16"	5/8"	1/16"	12"	6"	1/16"	ETC.		
14"	5/8"	1/16"	14"	6"	1/16"			
12"	5/8"	1/16"	16"	6"	1/16"			
			18"	6"	1/16"			

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CARLYLE RUBBER CO., Inc.

62 PARK PLACE NEW YORK, N. Y.

New—RAILS—Relaying

ALL SECTIONS
Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locom, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

M. K. FRANK

480 Lexington Ave. 35 St. Nicholas Building
New York, N. Y. Pittsburgh, Pennsylvania

FOR SALE

MARION Mod. 36, combination steam shovel crane and dragline—1 1/2 yd. cap.
UNIVERSAL—% swing crane, cal mounted, 24-ft. boom, % yd. capacity.
CLAMSHELL BUCKETS—%, 3/4, 1% and 2 yds. rehandling type.

P. A. HENAU

2140 Book Bldg. Detroit, Mich.

HYDRATORS

3 Kritzer & Schuller Hydrators.

AIR COMPRESSORS

BELTED: 255, 528, 670, 1000, 1300 & 1570 Ft.
ELECTRIC: 478, 670, 807, 1302, 1722 & 2200 Ft.
DIESEL: 605, 807 & 1000 Ft.
PORTABLE GAS: 130, 160, 220, 310, 540 & 1300 Ft.
STEAM: 40, 810, 828, 1300, 2200 & 3600 Ft.
CLAMSHELL BUCKETS, SKIPS & GRAPPLERS
Owen B A & H Stone Grapplers.
3 Yd. OWEN Type S Material Handling.
1 1/2 Yd., 1 Yd. & 3/4 Yd. HARWARD Class E.
18 Steel Skips 6 1/2 x 6 x 2 1/2.
5 Ton Bucyrus Rock Grabs.

CRANES AND DRAGLINES

% Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Loco.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.

CATERPILLAR SHOVELS

% Yd. Lima Diesel.
2 Yd. Marion Steam Shovel.
% Yd., 1 1/2 Yd., 2 Yd. & 4 Yd. MARION Electric
1 Yd. NORTHWEST Gas.
1 1/2 Yd. LIMA Diesel.
1 1/2 Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 120B Electric. Also 3 yd. Erie Elec.

DUMP CARS

40-KOPPEL 1 1/2 Yd. 24 & 30 In. Ga., V Shaped.
15-2 Yd., 3 Yd., 4 Yd., 5 Yd., 12 Yd., 36 In. Ga.
20-Mid. Ga. 12 Yd., 16 Yd., 20 Yd., & 30 Yd. Cap.
15-Mid. Ga. 50 Ton Battleship Gondolas.

FLAT CARS

6-50 ton std. ss. heavy duty flat cars.

HOISTING ENGINES

Gas: 15, 30, 40, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6 1/2 x 8, 7 x 10, 8 1/2 x 10, 10 x 12, 12 x 14.

DIESEL ENGINES

75, 90, 180, 200 HP. P. M. Engines.
110 HP Ingersoll Rand Engine.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.

BALL, ROD AND TUBE MILLS

62x8 Pebble Mill & 5x5 Batch Mill.
5"x22" HARDINGE CON. Dry Ball Mill.
6"x22" HARDINGE CONICAL Pebble Mill.
8"x22" HARDINGE CONICAL Ball or Pebble Mill.
42x8 5x6 & 10x5 Straight Ball Mills.
42x16 5x18 & 5x22 Tube Mills & 6"x22".
3 1/2 x 8 & 5x7 Air Rivent Tube Mills.
24x6, 6x12 & 5x2 ROD MITLS.

PULVERIZERS

JEFFERY 24x20 & No. 1 Shurtluff Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.
RAYMOND Imm. Mills. No. 4, 32 & 55.
GRINDLER XXH Mill & Ray Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILL & 5 ft. Chaser M.

STEEL STORAGE TANKS

10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

MATERIAL BIN

116 Ton Riser Knot 2 Comd.
400 BARREL CEMENT BIN

400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

SEPARATORS AND COLLECTORS

8, 10 and 14 ft. Separators, Claves & Bradley.
36x60 Fairmount & 36x20 Diamond.

JAW CRUSHERS

10x12 13x7 1/2, 14x7, 15x8, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 20x12, 20x15, 20x12, 30x15, 30x30, 30x18, 30x14, 30x30, 30x10, 30x24, 42x30, 48x42, 48x36, 48x45, 48x40, 48x16, 9x36.

CONE & GYRATORY CRUSHERS

42 in. McCully Mammoth Gyratory.
5 No. 10, 25, 37 & 48 Kennedy.
18 in. 24 in. 30 in. 36 in. and 48 in. Symons Disc.
4-10 T2 Traylor 4 ft. Gyratory.
4-Nos. 5, 8 & 6 Austin Gyratory.
2-Traylor T-12 Bulldog Gyratory, also 16 inch 8 in. Traylor T. Gyratory.
17 Gates K—Nos. 2, 4, 5, 6, 7 1/2, 8 & 9 1/2.
10 Inch Austin Model 105.
6, 10 & 12 inch Superior McCully.

SYNCHRONOUS MOTOR GENERATORS

100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. P.F.E.C. 3/60/2200-250-275 v.
200 K.W. RIDGWAY 3/60/2200-250-275v., 300 rpm.

SLIP RING MOTORS

52 H. P. GEN. P.F.E.C. 3/60/440 v., 1200 rpm.
(3) 100 H.P. GEN. P.F.E.C. 3/60/440v., 900-1200 rpm.

CONVEYOR PARTS

BELT: 1000 Ft. 40 in., 700 Ft. 40 in., 600 Ft. 36 in., 800 Ft. 30 in., 1642 Ft. 24 in., 517 Ft. 20 in., 297 Ft. 18 in., 500 Ft. 14 in., 200 Ft. 14 in.
IDLERS: 54 in. 42 in. 30 in. 30 in., 24 in. 20 in. 18 in. 14 in. & 14 in.

Head & Tail—Pulleys—Taken for all sizes.
Steel Frames: 2,000 Ft. 44 in. 30 in. & 24 in. Sections.

ROTARY DRIVERS AND KILNS

36 in. x 20 Ft. 5 Ft. x 30 Ft. 4 Ft. x 30 Ft. 4 Ft. x 16 Ft. 5 Ft. x 24 Ft. 5 Ft. x 20 Ft. 4 Ft. x 20 Ft. 6 Ft. x 20 Ft. 10x20, 7 1/2x20 & 5x10 Ft. Kilns.

STEEL DERRICKS

GUY: 8 Ton 85 Ft. Room, 15 Ton 100 Ft. Room, 20 Ton 115 Ft. Room, 50 Ton 100 Ft. Room.
STIFF LEG: 5 Ton 70 Ft. Room, 15 Ton 100 Ft. Room, 25 Ton 100 Ft. Room, 75 Ton 135 Ft. Room.

LOCOMOTIVES

GASOLINE: 3 Ton. 5 Ton. 5 Ton. 12.14 and 30 Ton.
STEAM: 9 Ton. 20 Ton. 40 Ton. 60 Ton & 80 Ton.
ELECTRIC: 2 Ton. 5 Ton. 8 Ton. 40 Ton.
DIESEL: 4, 8 & 15 Ton.

SCREENS

VIBRATING: 2x4, 2x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 4x12 & 4x12, 1, 2 & 3 Deck.

HYDRAULIC, ROTARY & ROBINSON.
REVOLVING: 31 1/2, 3x16, 3 1/2 x 18, 5x24, 4x16, 4x20, 4x28, 4x24, 5x30, 5x20, 6x20.

TIDEWATER EQUIPMENT & MACHINERY CORP.

COMPLETE PLANTS BOUGHT AND SOLD.
Lincoln Bldg., 60 East 42nd Street
New York, N. Y.

AIR COMPRESSORS

C-P 14x12", 529' belted, 100 hp slip ring motor.
Schramm 4 cyl. 360° V drive to 60 hp AC motor.
I-R 275' Waukesha engine, on skids.
I-R 44' vertical hopper cooled, belted.

BUCKET ELEVATORS

60' continuous elevator, 8" buckets, Ley Bushed chain.
40' continuous elevator, 29" low front buckets on belt.
40' continuous elevator, 30" buckets, 2 strand chain.
35' continuous elevator, 18" buckets, 2 strand chain.
40' elevator, 18" round bottom buckets, No. 8440 chain.
55' elevator, 12" malleable buckets, Ley Bushed chain.
60' elevator, 10" malleable buckets, Ley Bushed chain.
40' elevator, 8" malleable buckets, H&R chain.
25' elevator, 6" malleable buckets, No. 103 chain.
Malleable, Halem. Continuous steel buckets, 5" to 30".
Selected gears, sprockets, drive and elevator chain.

CRUSHERS, MILLS, ROLLS

Farrell jaw crusher, type A, 15 x 9".
Reliance jaw crusher, 16" x 9".
Champion jaw crusher, 24" x 12".
Traylor portable "Building" 11" gyratory crusher.
Williams Semi Vulcanite Hammer Mill, No. 2.
Harosh No. 1 1/2 Hammer mill, for light work.
8 x 8" opening.
Allis Chalmers 42" x 16" crushing rolls, type B.
Crushing roll with teeth, 34" x 24".
American Standard double crushing rolls, 36"x30".
American Standard Disintegrator, 18" x 24"x30".

BELT CONVEYOR EQUIPMENT

1000' 42" conveyor belt, 6 and 7 ply.
445' 30" conveyor belt, 6 ply.
86' 54" new conveyor belt, stepped 5-7 ply.
78 Robins 42" trough idlers, style 105.
25 S-W 30" trough idlers, type Y.
75 selected head and tail pulleys, 6" to 8".
200 drive pulleys and fly wheels, 6" to 8".
Cotton belt 12", 14", 18", 30", 48" in width.
Portable Scoop flat belt conveyor, 14" x 20".

SCREENS, WASHERS, SAND TANKS

2 Hammer vibrating screens, 3' x 5', single and 2 deck.
5 revolving screens, 2 x 8, 2 x 9, 30" x 12", 3 x 8' 4" x 16".
1 Telsmith 28" x 12" screw sand washer, V belt drive.
2 Telsmith No. 7 Sand Dewatering Tanks.

MISCELLANEOUS

75 hp Fairbanks-Morse Diesel Engine, VV, 300 rpm.
2 "Building" oil engines, 5 hp, 450 rpm.
1 National 2 drum dragline hoist, 25 hp electric.
2 Sprague 10 ton AC electric car pullers.
1 Sprague 5 ton DC electric vertical winch.
1 Sprague 2 1/2 ton AC electric vertical winch.
2 36" gauge gasoline locomotives, 4 and 8 tons.
1 36" gauge Mercury storage batteries locomotive.
1 revolving dryer, 18" center tube, 4' x 21' long.
1 Kuehling 1/2 yard batch mixer on skids.
1 Buffalo No. 9 Barreter on wheels, 1 1/4" esp.
Centrifugal pumps, motors, engines, air tanks.

G. A. UNVERZAGT & SONS

138 COIT ST., IRVINGTON, N. J.

LOCOMOTIVES SHOVELS — CRANES CARS

- 1—50 ton American 4 wheel saddle tank, code boiler, standard gauge, being rebuilt.
- 1—22 ton American 4 wheel saddle tank, code boiler, standard gauge, overhauled.
- 2—25 ton Porter 36" gauge saddle tanks, code boilers, built 1924-1926.
- 1—33 ton Standard Gauge Vulcan saddle tank, ASME code boiler.

Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

- 1—1 1/2 Yd. Rehandling Clamshell Bucket, Practically New.

Birmingham Rail & Locomotive Co.
BIRMINGHAM, ALABAMA

Diesel Walker Dragline, 2 yd., 60' boom.
Link Belt Crane Dragline, 1 1/2 yd., 60' boom.
Northwest 1 yd. Crane-Dragline, 45' boom.
Shovel Crane-Dragline, 1/2 yd. Also 1/2 yd. same.
B-G Bucket Loaders, Pulleys for 24" conveyors.
Fairbanks—For Link Belt K-44, K-45, K-55.
Scraper Hoists, Electric—150 HP, 100 HP, etc.
Compressors—220' port., 110' on 2 wheels.
Austin 105 Trench Machine, First class.
Buckets—1/2 to 2 yd. clam; 1/2 to 3 yd. drags.
JAMES WOOD, 33 W. Jackson Blvd., Chicago, Ill.

DRYER or KILN

1—7' dia., 55' long, Vulcan made up 1/4" plate, complete, new condition, suitable for use as Dryer or Kiln.
1—5' x 28 ft.

GYRATORY CRUSHERS

All standard makes Size No. 4, openings 8 x 30 to Size 21, openings 42 x 134".

JAW CRUSHERS

8 x 16 up to and including 60 x 84.

CRUSHER SPECIALS

1—Allis Chalmers 24 x 36, and 36x42, used only three months.
1—Symons 2' Cone Crusher, coarse bowl.
1—Buchanan and 1—Farrell 12 x 30.
3—Traylor 12" and 16" gyratory.
2—Allis Chalmers 6" and 10" Superior.
1—Telsmith 16-A Crusher.
1—Acme 14 x 26 Crusher.
1—New Holland 7 x 12".

LOCOMOTIVES, STEAM AND GAS

1—American 40 ton, 4 wheel, std. gauge, saddle tank, cylinders 14 x 22, '90 lbs. working pressure, ASME boiler. For sale or rent.
2—Vulcan 32 ton, 4 wheel, std. gauge, saddle tank, air brakes.
1—Vulcan 21 ton, steam, air brakes, std. gauge.
1—Plymouth 8 ton, gas.

SHOVELS AND CRANES

1—Electric Shovel with 3 yd. or 4 yd. dipper.
1—2 yd. Steam, full revolving, crawler tread.
1—Browning 1/2 yd. Crawler Crane, double drums, 38' boom with 5' extension.
1—O & S 1/2 yd. Crawler Crane with double drums, 50 ft. boom.

BOOT BUCKET ELEVATOR

1—Link Belt, motor driven, steel housing, size 15" x 42" x 30" high, style No. 2C, serial No. W-7001, complete with No. 88 Link Belt chain and 6" x 6" buckets with K-1 bucket attachments.

PUMPS

2—12" type S Centrifugal Pumps, 5500 GPM, 125' head, with 300 H.P. A.C. motors, 3 phase, 60 cycle, 2200 volt, 1760 RPM with starters.

WE WILL BUY ANY MODERN PIECE OF EQUIPMENT ANYWHERE.

A. J. O'NEILL

Lansdowne Theatre Building

LANSOWNE, PA.

Philadelphia Phone: Madison 8300

- 1—1 Yd. Northwest Crane and Backhoe.
- 1—1/2 Yd. Northwest Shovel.
- 1—1/2 Yd. P. & H. Shovel, Hydraulic Controls.
- 2—1/2 Yd. General Shovels and Cranes.
- 1—1/2 Yd. P. & H. Shovel.
- 1—1/2 Yd. P. & H. Shovel.
- 1—1/2 Yd. Michigan Shovel.
- 1—1/2 Yd. P. & H. Shovel Attachment.
- 1—Universal Truck Crane.
- 1—Model 212 Diesel Grader.
- 1—Model D-4 Caterpillar Bulldozer.
- 1—Model D-2 Caterpillar Bulldozer.
- 1—30" x 24" Type 15-B Farrell Jaw Crusher.
- 1—30" x 20" Wheeling Jaw Crusher.
- 1—24" x 20" McLanahan Roll Crusher.
- 1—6" Allis-Chalmers Reduction Crusher.
- 1—Model 32 Telsmith Reduction Gyratory Crusher.
- 1—Complete Crushing Plant consisting of:
24" x 36" Farrell Jaw Crusher
10-B Telsmith Gyratory Crusher
36" Telsmith Gyrasphere Crusher
Elevators, Conveyors, Screens, Feeders, Motors, Compressors, Scales, etc.
- 1—42" x 36" Type B-2 Jeffrey Ball Bearing Swing Hammer Pulverizer.

BLUE BALL MACHINE WORKS
Blue Ball, Pa.

FOR SALE

- 4—American 20-ton Standard gauge locomotives.
- 2—Vulcan Standard gauge locomotives 18 ton.
- 12—Koppel Steel dump cars 20 cubic yard capacity.
- 4—Western dump cars 6 cubic yard capacity.

Rails, Frogs and Switches

O'Brien Bros. Sand and Gravel Corp.
Port Washington, New York

WE BUY — SELL — RENT

Crawler and Locomotive Cranes, Draglines, etc.
Air Compressors, Engines, Motors, Generators.
Jaw and Cone Crushers, Boilers and Tanks.
Hoists, Derricks, Locomotives, Diesel Engines.

MISSISSIPPI VALLEY EQUIPMENT CO.
315 Locust St. St. Louis, Mo.

Are you buying anything now?
Have you anything to sell?

FOR SALE!

- 1—Kennedy Van Saun 8' x 12' Air Swept Tube Mill, with 90" fan, 9' and 13' cyclones.
- 2—Jeffrey Type "A" 24" x 36" and 18" x 24" Hammer Mills.
- 1—Rotary Dryer, 3' x 25', stainless steel shell, with extra chrome iron shell.
- 1—Denver 36" x 16" Crushing Rolls.
- 3—Tyler Hammer Screens, 3' x 5', 4' x 5'.
- 1—Raymond Roller Mill, 4 roll, high side.
- 1—Raymond No. 1 Impact Mill, motor driven, with cyclone and tubular collector.
- 6—ROTARY DRYERS, 3' x 18', 3' x 20', 4' x 30', 4' x 40', 5' x 35', 5' x 50', 6' x 65', 6' x 70'.
- 16—Jaw Crushers, 3' x 5" to 84" x 56".
- 14—Hammer Mills, Williams, Jeffrey, Grun- dler, JayBee, from 5 to 100 HP.
- 10—Steel Bins, 10 to 100 tons.
- 25—Centrifugal Pumps, 2" to 6".
- 3—Tube Mills, 4' x 16', 5' x 22".
- 6—Oliver Filters, 3' x 2' to 11' x 8'.
- 6—Dorr Thickeners and Classifiers.

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WANTED: Your surplus equipment for cash—from a single item to a complete plant.

BRILL Equipment Co.
183 VARICK STREET NEW YORK

CRUSHERS

GYRATORY: 42" Gates K. 20" Superior McCully (Like new). 20" Superior McCully, Gates Nos. 12, 16, 2, 3, 1 1/2, 6, 3, 4, 2, 1 (16 avail.) Telsmith Nos. 4, 5, 6, 8, 9 & 18. Also many Austins, Kennedys and Traylor's, many sizes.
JAW TYPE: Traylor 60x24, 48x36, 42x24, 36x24, 30x24, 24x24, 18x24, 12x24, 6x24, 3x24, 2x24, 1 1/2x24, 1x24, 3/4x24, 1/2x24, 1/4x24, 1/8x24, 1/16x24, 1/32x24, 1/64x24, 1/128x24, 1/256x24, 1/512x24, 1/1024x24, 1/2048x24, 1/4096x24, 1/8192x24, 1/16384x24, 1/32768x24, 1/65536x24, 1/131072x24, 1/262144x24, 1/524288x24, 1/1048576x24, 1/2097152x24, 1/4194304x24, 1/8388608x24, 1/16777216x24, 1/33554432x24, 1/67108864x24, 1/134217728x24, 1/268435456x24, 1/536870912x24, 1/1073741824x24, 1/2147483648x24, 1/4294967296x24, 1/8589934592x24, 1/17179869184x24, 1/34359738368x24, 1/68719476736x24, 1/137438953472x24, 1/274877906944x24, 1/549755813888x24, 1/1099511627776x24, 1/2199023255552x24, 1/4398046511104x24, 1/8796093022208x24, 1/17592186044416x24, 1/35184372088832x24, 1/70368744177664x24, 1/140737488355328x24, 1/281474976710656x24, 1/562949953421312x24, 1/1125899906842624x24, 1/2251799813685248x24, 1/4503599627370496x24, 1/9007199254740992x24, 1/18014398509481984x24, 1/36028797018963968x24, 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10, 20, 24 or 30 cubic yard
AIR DUMP CARS—
Any quantity, type, make or location.
Also 10 to 30-ton Gas or Diesel Locom.
IRON & STEEL PRODUCTS, INC.
38 years' experience
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Up to 5000 Acres of Tennessee
PHOSPHATE LANDS
Mineral Rights or Fee Simple
BEST AND SAFEST PLACE TO INVEST
IDLE MONEY
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MINERAL COLORS for CEMENT-PLASTER-STUCCO CONCRETE PRODUCTS

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BLUE RIDGE TALC CO., INC.
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Consulting Engineers



CORE DRILLING ANYWHERE

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DRILLING COMPANY**
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Claverack, N. Y.
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Cost Reduction
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Modernization

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ROTARY KILN PLANTS
DESIGN — OPERATION
YORK PENNA.

Positions Wanted

POSITION WANTED BY GRADUATE
Chemical Engineer with 12 years experience in the Cement Industry. Experience has covered Chemical Process Control, Research, Geological Exploration for Raw Materials, Operation and Production of Special Cements, Concrete Service Work. Address Box 996, Care of Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

Positions Vacant

WANTED: MASTER MECHANIC TO take charge of maintenance in cement plant. Only a man with qualifying experience will be considered. Give full particulars and references. Address Box A-82, care of Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

EXECUTIVE TO TAKE FULL RESPONSIBILITY of Sand and Gravel Plant involving river operations. Must have technical education or equivalent with ability to plan and supervise operations, including production and maintenance. Experience in managing river fleet essential. Applicant state age, full details of past record, experience, earnings and education in first letter. Address Box A-76, Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

WANTED—CINDER BLOCK PLANT foreman, also Concrete Pipe plant foreman, capable of supervisory maintenance. Draft exempt. Address Box A-81, care of Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

BUYERS' FREE SERVICE

We are in the market for and would like to receive prices and literature on the items checked below:
RESEARCH SERVICE DEPARTMENT, The Operator, 309 West Jackson Blvd., Chicago, Ill.

...Admixtures	...Cement Process	...Dredge Pumps	...Laboratory Apparatus	...Seal Rings
...Aerial Tramways	...Central Mixing Plants	...Drills (Rock)	...Lift Trucks	...Septic Tank Molds
...Aggregates (Special)	...Chimney Block Mach.	...Drill Bits	...Line (Hydrated)	...Sewer Pipe Machines
...Agitators	...& Molds	...Drill Sharpening	...Line Handling Equip.	...Shovels (Power)
...Air Compressors	...Clarifiers	...Machines	...Lime Plants	...Silos (Storage)
...Air Filters	...Classifiers	...Drill Steel	...Lime Putty Plants	...Silo Stave Machines
...Air Separators	...Coal Pulverizing	...Drives (Gear Reduction)	...Loaders	...Slakers (Rotary)
...Ash Receptacle Molds	...Equipment	...Dry Batch Conveyors	...Locomotives	...Slurry Mixers
...Asphalt Mixing	...Concentrators	...Dryers	...Lubricants	...Slurry Pumps
...Plants	...Concrete Mixers	...Dust Collecting	...Manganese Steel Parts	...Slurry Separators
...Batching Plants	...Concrete Paints &	...Systems	...Mills (Ball, Compartment, Emery, Hammer, Rod, Roll, Tube)	...Slurry Thickeners
...Bugs	...Coatings	...Dust Precipitators	...Mortar Mixers	...Soft Stone Eliminators
...Bulging Machines	...Concrete Waterproofing & Dampproofing	...Dust Recovery Plants	...Pallets (Steel, Wood)	...Speed Reducers
...Balls (Grinding)	...Contractors (Cement Mill)	...Dynamite	...Pans, Grinding (Wet & Dry)	...Structural Steel
...Barges	...Conveyors	...Electric Motors	...Perforated Metal	...Fabrication
...Batchers (Weighing)	...Conveyor Idlers and	...Electrostatic	...Pipe (Dredge)	...Tampers (Hand & Power)
...Bearings	...Rolls	...Elevators	...Pipe Molds and Machines (Concrete)	...Tanks (Storage)
...Belt Repair Equip.	...Coolers	...Engineering Service	...Plaster Mixers	...Tires
...Beltting (Conveyor & Elevator)	...Corn Crib Block and Tile Machines	...Consulting & Designing	...Pneumatic Hammers	...Tractors
...Bin Level Indicators	...Correcting Basins	...Engines (Diesel, Gasoline, Steam)	...Portable Aggregate Plants	...Transfer Mixers
...Bins (Storage)	...Cranes (Crawler & Locomotive)	...Feeder	...Pulverizers	...Trucks (Agricultural)
...Blasting Supplies	...Crushers	...Floor Tile Machines	...Pumps (Pulverized Material)	...Trucks (Dump)
...Block Machines, Building	...Crushing & Screening Plants (Portable)	...Flotation Equipment	...Railway Equipment	...Trucks (Industrial)
...Boats	...Culvert Pipe Mach. & Molds	...Garbage Receptacle Molds (Concrete)	...Reciprocating	...Trucks (Mixer Body)
...Brick Machines & Molds	...Curing Equipment	...Garden Furniture Molds (Concrete)	...Refractories	...Unloaders
...Buckets	...Curb Forms	...Generators & M-G Sets	...Refrigerators	...Unloaders (Boat)
...Bulldozers	...Derivatives	...Guns (Hydraulic)	...Refrigerators (Screw)	...Unloaders (Box Car)
...Bulk Cement	...Dewatering	...Gutter Block Machines (Concrete)	...Rock Wall Cupolas	...V-Beltting
...Batching Plants	...Equipment	...Hobs	...Roofing Tile Machines	...Vibrators (Bin)
...Bulk Cement Storage Plants	...Diesel Engine (Stationary & Automotive)	...Hoppers	...Sand Drags	...Wagons (Dump)
...Buildings	...Dippers & Teeth	...Hose	...Sand & Gravel Plants	...Wall Forms & Machines (Concrete)
...Bulldozers	...Disintegrators	...Hydrators (Lime)	...Sand Lime Brick Machinery	...Washers (Sand, Gravel & Stone)
...Burial Vault Forms	...Drum Line Cableway	...Induced Draft Fans	...Sand Settling Tanks	...Welding & Cutting Equip.
...Calculating Equipment	...Excavators	...Joint & Slab Machines (Concrete)	...Scrapers (Power Drag)	...Well Curb Mach. & Molds
...Calcium Chloride	...Drum Tile Machines	...Kilns (Rotary, Shaft, Vertical)	...Screens (Revolving, Vibrating, Etc.)	...Wire Cloth
...Carbon Dioxide Plants	...Dredges			...Wire (Copper, Iron & Steel)
...Cars (Industrial)				...Wire Rope
...Catch Basin Block Machines				...Wire Rope Fittings
...Cement Colors				

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Firm Name _____ State _____



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No. 1 of a series of advertisements in the interests of national economy to aid users of crushing equipment unable to secure new units during the emergency.

Proper Feeding of Materials

Avoid feeding stone that is too large for the crusher opening as it is certain to increase wear and cut production. As long as a large rock chokes the mouth of the crusher, no new material can be fed and an empty crusher is non-productive. Avoid dumping directly into crusher mouth as big rocks may be in the load to choke and damage equipment and its removal is a slow, tedious job.

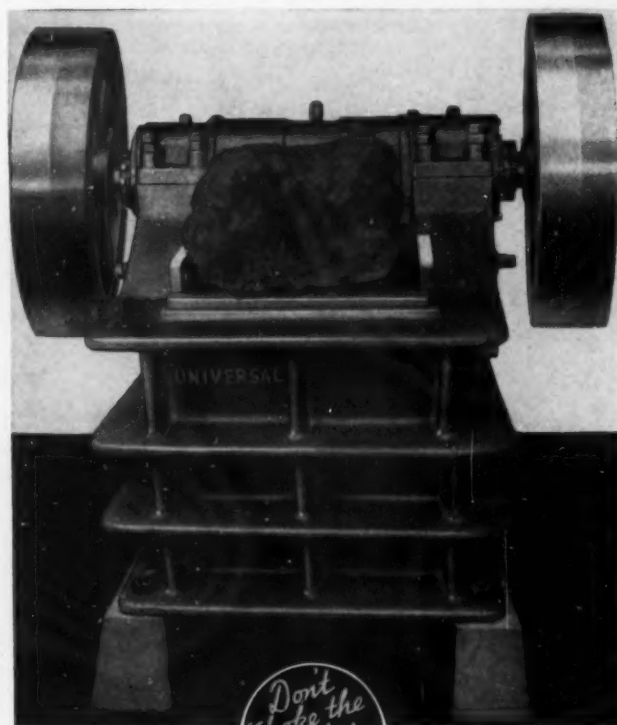
Don't ever use a sledge hammer to break a large rock in the crusher while it is running. An accident with the sledge might easily result in serious damage to the crusher. It is much safer to stop the crusher. Better still—be sure all rock is reduced to the proper size before bringing it up to the crusher.

Use a dump box or ramp for handling incoming material, feeding by rake or shovels and breaking pieces too large for feed by hand. Of course, an apron or conveyor feeder dumping onto a grizzly or screen is preferred because it provides a steady feed and allows for bypassing fines, lessening the amount of material going through the crusher, reducing wear and increasing plant capacity.

Removal of excess clay avoids packing of the crusher jaws and slippage. Removal of tramp

iron in the field or on the conveyor avoids costly breakdowns.

Universal Crushers and Crushing Plants are built for long time trouble-free service—proper care and maintenance will greatly extend their useful service life.



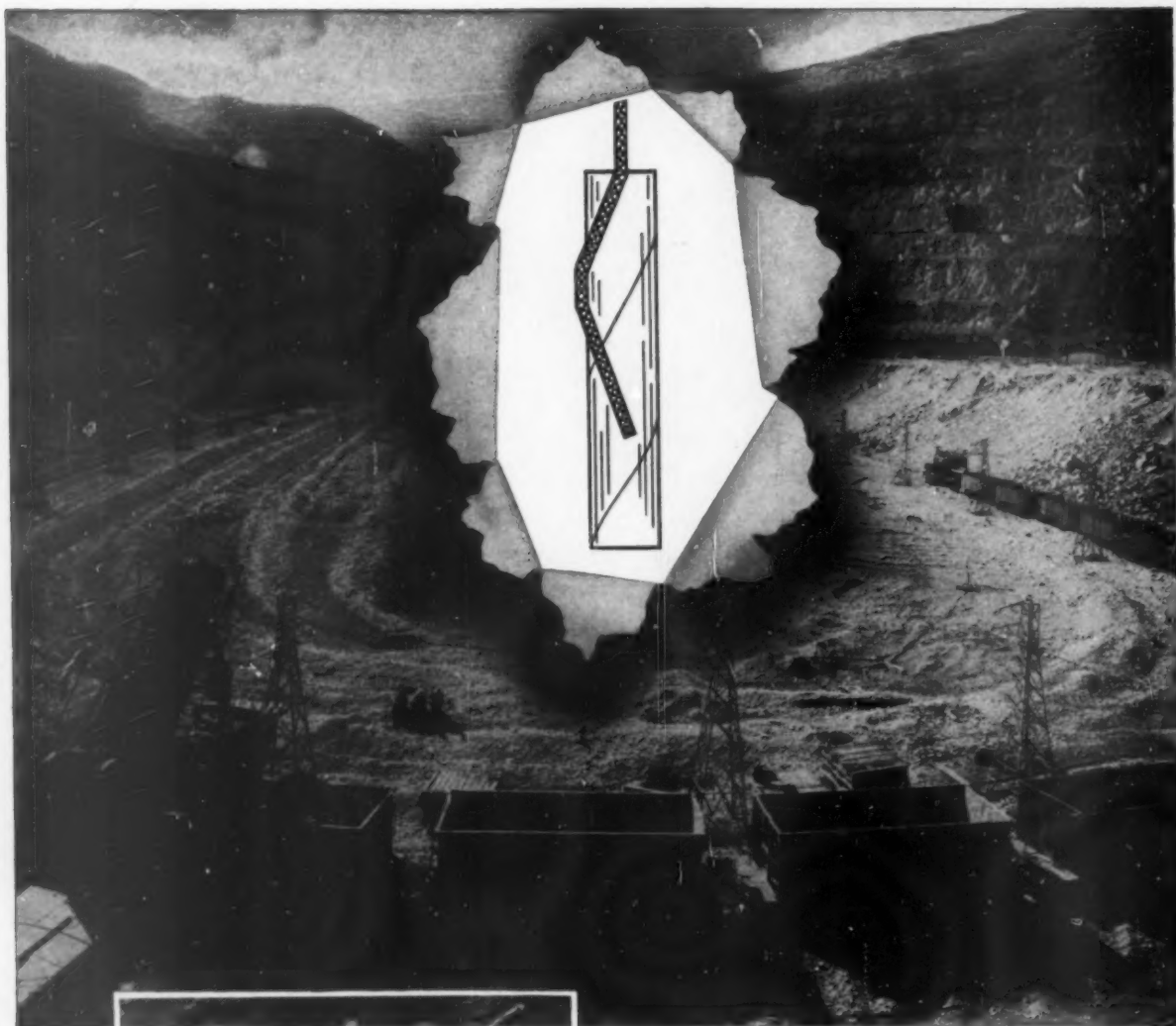
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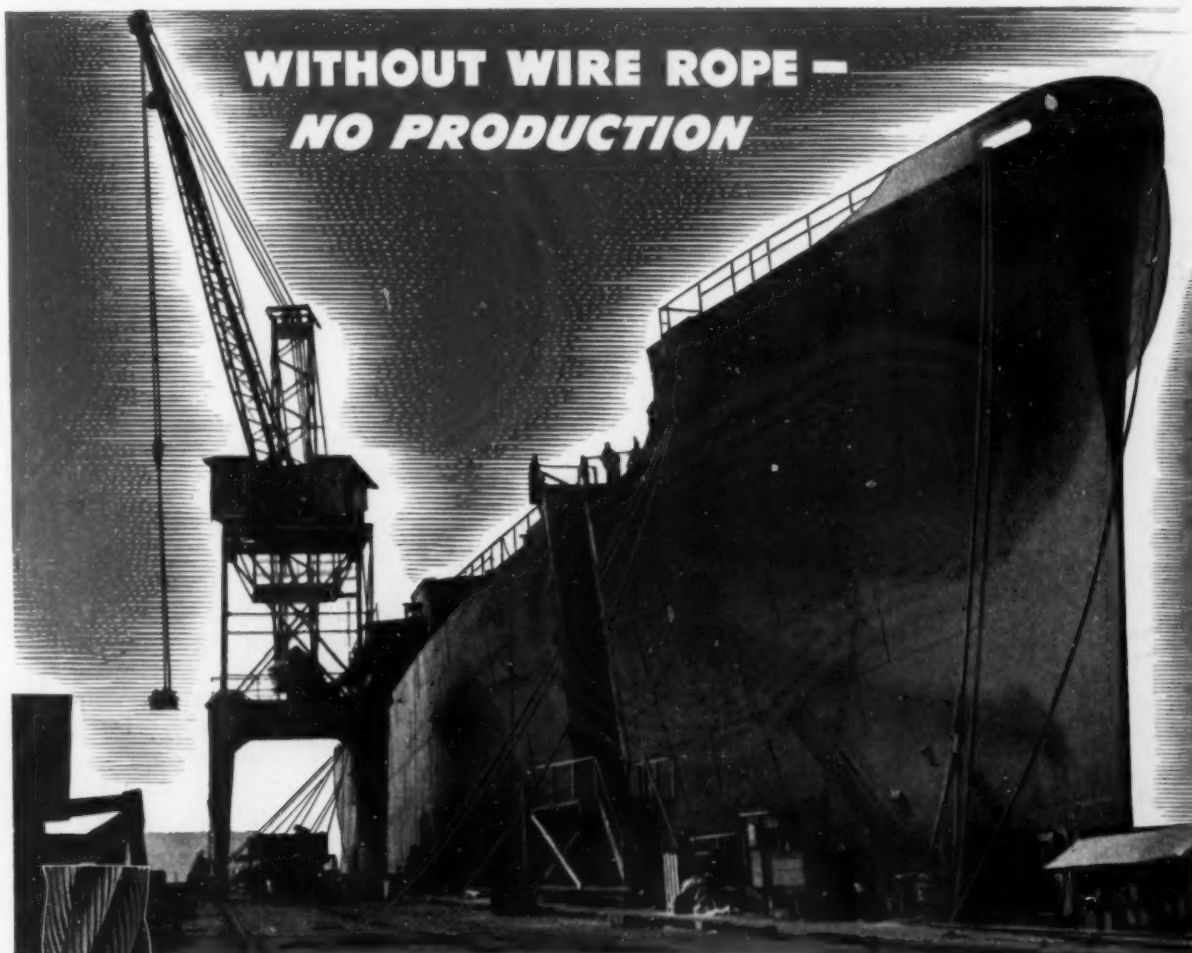
The light weight and flexibility of Primacord-Bickford Detonating Fuse promote ease of use, and—with its high efficiency—produce desirable economies in blasting. Send for the Primacord Book.

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NO PRODUCTION**

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MORE PRODUCTION**

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